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REPORT ON THE CONSERVATION STATUS OF *Penstemon lemhiensis*, A CANDIDATE THREATENED SPECIES: MONTANA

Taxon Name:	*Penstemon lemhiensis* (Keck) Keck & Cronq.
Common Name:	Lemhi beardtongue
Family:	Scrophulariaceae
States Where Taxon Occurs:	U.S.A.: Montana, Idaho
Current Federal Status:	USFWS Notice of Review, Category 2
Recommended Federal Status:	USFWS Notice of Review, Category 2
Author of Report:	J. Stephen Shelly
Original Date of Report:	8 May 1990
Date of Most Recent Revision:	N/A
Individual to Whom Further Information and Comments Should be Sent:	Lisa Schassberger Montana Natural Heritage Program State Library Building 1515 E. 6th Avenue Helena, MT 59620

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I. SPECIES INFORMATION

1. Classification and nomenclature.

A. Species.

1. Scientific name.

a. **Binomial:** Penstemon lemhiensis (Keck) Keck and Cronquist.

b. **Full bibliographic citation:** Keck, D.D., and A. Cronquist. 1957. Studies in Penstemon - IX. Notes on northwestern American species. Brittonia 8: 248.

c. **Type specimen:** Granite Mountain, Lemhi County, Idaho, July 1, 1937, Ray F. Blair s.n. (Dudley Herbarium, Stanford University).

2. Pertinent synonym: Penstemon speciosus Dougl. ssp. lemhiensis Keck (Keck 1940).

3. Common names: Lemhi beardtongue, Lemhi penstemon.

4. Taxon codes: PDSCR1L3N0 (The Nature Conservancy); 7764, PENLEM (U.S. Forest Service, Region 1).

5. Size of genus: Penstemon lemhiensis is one of approximately 250 species in the genus; most of these species occur in the western United States (Cronquist et al. 1984).

B. Family classification.

1. Family name: Scrophulariaceae.

2. Pertinent family synonym: None.

3. Common names for the family: Figwort Family, Snapdragon Family.

C. Major plant group: Dicotyledoneae.

D. History of knowledge of taxon: Penstemon lemhiensis was first collected in 1920, in Lemhi County, Idaho, by E.B. and L.B. Payson (1975, ID). Subsequent collections from the same county were made by R.F. Blair in 1936, 1937 and 1938 (Keck 1940), and in

1946 by Hitchcock and Muhlick (14335, NY). On the basis of the Blair specimens, Keck (1940) described Penstemon speciosus ssp. lemhiensis. The first collection in Montana was made in 1947 by F.H. Rose (3502, MONTU), in Beaverhead County. The first collection in Ravalli County, Montana, was made by T.G. and V.C. McCall (352, MONTU) in 1950. These additional specimens, along with more detailed information regarding the distribution and relationships of P. speciosus, substantiated the need to elevate ssp. lemhiensis to the species level (Keck and Cronquist 1957).

During the period 1973-1988, 19 populations were documented in Lemhi County, Idaho; most of these were found by Dr. Douglass Henderson, University of Idaho. In Montana, an early assessment of threatened and endangered plant species (Watson 1976) reported five populations in Beaverhead County, Montana. Subsequently, a detailed ecological study of the species was completed (Ramstetter 1983); four populations in Montana, and two in Idaho, were studied in detail.

Field surveys in Montana were also conducted in 1986, 1987, and 1989 by the Montana Natural Heritage Program (MTNHP). These surveys have been partially funded by the U.S. Forest Service; funding was also provided by the U.S. Fish and Wildlife Service (Section 6 Project Agreement SE-5-P-1). Prior to 1989, P. lemhiensis had been recently documented (1986-1988) from 18 sites in Beaverhead County; 12 new sites were located in 1989. One recent report could not be verified (Medicine Lodge Creek, 022), and one historical collection (021: "West of Big Hole Battlefield," 1947, F.H. Rose (3502), MONTU) has not been relocated. In Ravalli County, two historical records were known; it is believed that the 1989 surveys resulted in the rediscovery of these populations. Also, two previously unrecorded populations were found, and one population was reported to the MTNHP. Thus, P. lemhiensis is currently known from 35 locations in Montana (30 in Beaverhead County, five in Ravalli County).

E. Comments on current alternative taxonomic treatments: There are no known current alternative taxonomic treatments.

2. Present legal or other formal status.

A. International: None.

B. National.

1. United States.

a. **Present designated or proposed legal protection or regulation:** U.S. Fish and Wildlife Service: Penstemon lemhiensis is currently included in Category 2 of the U.S. Fish and Wildlife Service Notice of Review (U.S. Department of Interior 1990), under consideration for federal listing as a threatened species. Category 2 taxa are those "...for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules."

U.S. Forest Service: P. lemhiensis is currently included on the U.S. Forest Service Region 1 sensitive species list (U.S. Department of Agriculture 1988; Reel et al. 1989). Sensitive species are "...those plant and animal species identified by the Regional Forester for which population viability is a concern, as evidenced by: a.) (s)ignificant current or predicted downward trends in population numbers or density," and/or "b.) (s)ignificant current or predicted downward trends in habitat capability that would reduce a species' existing distribution" (Reel et al. 1989). Through its inclusion on the Region 1 sensitive species list, P. lemhiensis has legal protection under U.S. Forest Service agency policies (W. Ruediger, pers. comm.).

b. **Other current formal status recommendations:** The species is currently listed as "threatened throughout range" (global rank = G3) by The Nature Conservancy.

c. **Review of past status:** The species was originally included in the "notice of consideration" by the U.S. Fish and Wildlife Service in 1975 (U.S. Department

of Interior 1975). It was formally placed in Category 1 in 1980 (U.S. Department of Interior 1980). It was placed in Category 2 in 1983, and has retained this status to date (U.S. Department of Interior 1983, 1985, 1990).

2. State.

a. Montana.

i. **Present designated or proposed legal protection or regulation:** None.

ii. **Other current formal status recommendations:** The species is currently listed as "imperiled in Montana" (state rank = S2) by the Montana Natural Heritage Program (Shelly 1990a).

iii. **Review of past status:** Previously listed as "recommended threatened" by the Montana Rare Plant Project (Lesica et al. 1984).

b. Idaho.

i. **Present designated or proposed legal protection or regulation:** None.

ii. **Other current formal status recommendations:** The species is currently listed as "imperiled in Idaho" (state rank = S2) by the Idaho Natural Heritage Program (Moseley and Groves 1990).

iii. **Review of past status:** Henderson (1981) recommended that P. lemhiensis be accorded federal "threatened" status.

3. Description.

A. **General nontechnical description:** Penstemon lemhiensis is a stout herb with stems that are about 15-30 inches tall. The flowers are bright blue to purple in color, and about 1½-2 inches long. The

basal leaves are entire, with no teeth or lobes, and are large, being about 3-6 inches long. The stem leaves are shorter, about 1-4 inches long, and are opposite. The plants are in flower from early June to July, depending on weather conditions and altitude.

B. **Technical description:** Perennial herb, 3-7 dm. (12-28 in.) tall, with one-several stout stems from a branched caudex; herbage often finely hirtellous-puberulent at least in part; leaves entire, the basal ones clustered, up to 15-20 cm. (6-8 in.) long and 1-2.5 cm. (0.4-1 in.) wide, with petiolate, oblanceolate to narrowly elliptic blades; cauline leaves sessile, opposite, mostly lanceolate, up to ca. 10-12 cm. (4-4.8 in.) long and 1-2 cm. (0.4-0.8 in.) wide; inflorescence glabrous, of several-many loose verticillasters, more or less secund in life; calyx 7-11 mm. (0.27-0.43 in.) long, the segments lanceolate to narrowly ovate, evidently but not strongly scarious-margined below, tapering to a long-acuminate or subcaudate tip; corolla bright blue to purplish, 40-55 mm. (1.5-2 in.) long, ca. 1.5 cm. (0.6 in.) wide at the mouth; pollen sacs 1-3 mm. (0.04-0.12 in.) long, divaricate, evidently dentate-ciliolate along the sutures, pubescent near the connective and on side away from dehiscence; staminode glabrous; capsules ca. 10-15 mm. (0.4-0.6 in.) long; seeds ca. 2-3 mm. (0.08-0.12 in.) long (adapted from Hitchcock et al. 1959; Dorn 1984).

C. **Local field characters:** Penstemon lemhiensis is a tall, conspicuous species; when in full bloom, it is easy to see during field surveys. The most reliable distinguishing features include: a.) the large, bright blue corollas, b.) the sharp, narrow, elongated tips on the calyx lobes, and c.) the lack of hairs on the staminode (sterile filament). Penstemon lemhiensis is thus very distinctive in comparison to other species that were frequently encountered during field surveys (especially P. aridus, P. procerus, and P. radicosus). These latter species are smaller in stature, have smaller flowers, and differ with respect to the other floral features.

D. **Identifying characteristics of material which is in interstate or international commerce or trade:** No interstate or international commerce or trade known.

E. **Photographs and line drawings:** An illustration of P. lemhiensis is presented in Hitchcock et al. (1959). The color slides (p. 6) are duplicates of

PENSTEMON LEMHIENSIS
inflorescence

MTNHP STEVE SHELLY

French Creek (ΦΦ9)
6/19/86

PENSTEMON LEMHIENSIS
inflorescences

MTNHP STEVE SHELLY

French Creek (ΦΦ9)
6/19/86

PENSTEMON L
habit

MTNHP

Lemhi Pass (ΦΦ3)
6/22/8

PENSTEMON LEMHIENSIS
plant growing on a
roadbank

MTNHP STEVE SHELLY

Argenta (ΦΦ1)
6/20/86

PENSTEMON LEMHIENSIS
wasp pollinator in
center

MTNHP STEVE SHELLY

Red Butte (Φ12)
6/19/86

PENSTEMON LEMHIENS
habitat

MTNHP

Red Butte (Φ12)
6/19/86

PENSTEMON LEMHIENSIS
habitat

MTNHP STEVE SHELLY

Badger Pass North
(Φ19) 6/18/87

PENSTEMON LEMHIENSIS
habitat (subalpine)

MTNHP STEVE SHELLY

Echo Gulch (Φ11)
7/8/86

PENSTEMON LEMHIEN
habitat

MTNHP

Lemhi Pass (ΦΦ3)
6/22/86

PENSTEMON LEMHIEN
habitat

MTNHP

Badger Pass North
(Φ19) 6/18/8

those taken at the sites indicated. Additional slides from other locations in Montana are housed at the MTNHP office, Helena, Montana.

4. Significance.

A. Natural: Within the genus Penstemon, P. lemhiensis belongs to the subgenus Habroanthus, section Glabri, series Speciosi (Ramstetter 1983). The subgenus contains four other species in the Pacific Northwest region (P. cyaneus, P. payettensis, P. pennellianus, and P. speciosus); of these, only the first two also occur in Montana. Although they are superficially similar, these species are "technically well-marked taxa which occupy distinctive and hardly overlapping geographic areas" (Hitchcock et al. 1959). Thus, P. lemhiensis would be an important taxon in biosystematic studies that address the relationships within the subgenus Habroanthus. Also, studies adressing the pollination biology of P. lemhiensis indicate close relationships with certain insects, especially Pseudomasaris vespoides (Ramstetter 1983). Otherwise, P. lemhiensis is not known to have any peculiar adaptations or structures, or roles in stabilizing landforms. Obligate relationships with other species are unknown.

B. Human: As discussed, P. lemhiensis would be of scientific significance in biosystematic studies addressing its relationships within the genus. Because of its striking stature and beauty, it also has high horticultural potential. Otherwise, the species has no known agricultural, economic, or other human uses or significance at this time.

5. Geographical distribution.

A. Geographical range: Penstemon lemhiensis is currently known from a total of 54 occurrences: 19 in Idaho (Lemhi County), and 35 in Montana (30 in Beaverhead County, five in Ravalli County). It is historically known from four locations in Lemhi County, Idaho, and one location in Beaverhead County, Montana. The range of the species in Montana is indicated in Figure 1, p. 8.

B. Precise occurrences.

1. Populations currently known to be extant (Montana): Table 1, pp. 9-16, lists populations currently known in Montana.

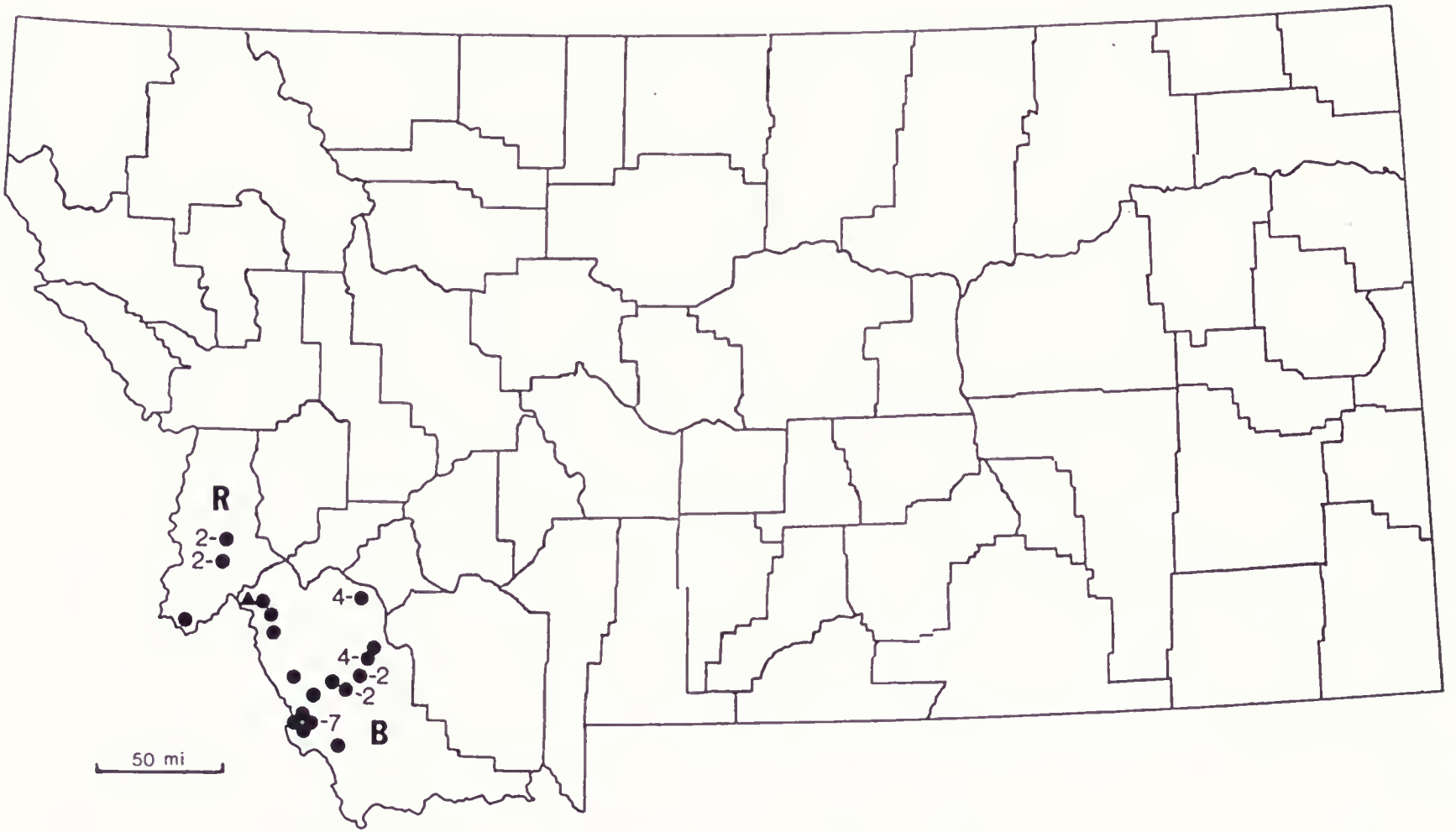

Figure 1. Distribution of Penstemon lemhiensis in southwestern Montana (B = Beaverhead County, R = Ravalli County).

● = recently documented populations (35)

▲ = historical record, current status unknown (1)

TABLE 1. Populations currently known extant in Montana, listed by county and occurrence number.

BEAVERHEAD COUNTY

Occurrence number: 001 Site name: ARGENTA
County: BEAVERHEAD

Latitude: 451818 Longitude: 1125545 Elevation: 6700
Township & Range: 006S011W Section: 15 Subsection/additional sections: SE4;22,NE4;23,NW4NW4
USGS Quad: ERMONT
Size: 7.5 minute series
Year of initial discovery: 1976 Date of most recent observation: 1988
Directions: S. PIONEER MOUNTAINS, N. SIDE OF BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. 2400), 0.2 MI. W. OF RATTLESNAKE CR. ROAD (N.F. RD. 192), CA. 4 AIR MI. WNW. OF ARGENTA.

Occurrence number: 002 Site name: TRAIL CREEK
County: BEAVERHEAD

Latitude: 445733 Longitude: 1132132 Elevation: 6520
Township & Range: 010S014W Section: 18 Subsection/additional sections: S2,17SW4,19NW4;T10SR15W:24NE4
USGS Quad: EVERSON CREEK
LEMHI PASS
Size: 7.5 minute series
Year of initial discovery: 1970 Date of most recent observation: 1989-06-29
Directions: TRAIL CREEK, ALONG ROAD TO LEMHI PASS (BEAVERHEAD N.F. RD. 3909.2), CA. 3.5-4.5 AIR MI. ESE. OF LEMHI PASS.

Occurrence number: 003 Site name: LEMHI PASS
County: BEAVERHEAD

Latitude: 445757 Longitude: 1132538 Elevation: 6960
Township & Range: 010S015W Section: 15 Subsection/additional sections: SE4NW4,NE4SE4,14SW4
USGS Quad: LEMHI PASS
Size: 7.5 minute series
Year of initial discovery: 1983 Date of most recent observation: 1989-06-29
Directions: NORTH SIDE OF LEMHI PASS ROAD (BEAVERHEAD N.F. RD. 3909.2), 1.0-1.6 AIR MILES SE. OF LEMHI PASS, CA. 1.4-2.0 MILES WEST OF SELWAY RANCH.

Occurrence number: 005 Site name: BADGER PASS
County: BEAVERHEAD

Latitude: 451254 Longitude: 1125626 Elevation: 7260
Township & Range: 007S011W Section: 22 Subsection/additional sections: N2NW4
USGS Quad: BANNACK
Size: 7.5 minute series
Year of initial discovery: 1972 Date of most recent observation: 1989-06-14
Directions: 1.45 AIR MILES SSE. OF BADGER PASS, ADJACENT TO MICROWAVE TOWER ON GRAVEL ROAD 1.3 AIR MI. S. OF BIG HOLE ROAD (ST. HWY. 278), CA. 4.5 AIR MI. NNE. OF BANNACK.

Occurrence number: 006 Site name: BIG HOLE NATIONAL BATTLEFIELD
County: BEAVERHEAD

Latitude: 453842 Longitude: 1133919 Elevation: 6320
Township & Range: 002S017W Section: 24 Subsection/additional sections: W2SE4,13SW4,23SE4
USGS Quad: BIG HOLE BATTLEFIELD
Size: 7.5 minute series
Year of initial discovery: 1976 Date of most recent observation: 1986-07-08
Directions: BIG HOLE NATIONAL BATTLEFIELD, 9 MILES WEST OF WISDOM ON ST. HWY. 43.

TABLE 1. (cont.).

Occurrence number: 008 Site name: JOHNSON GULCH
County: BEAVERHEAD

Latitude: 445217 Longitude: 1125858 Elevation: 6500
Township & Range: 011S011W Section: 18 Subsection/additional sections: SE4
USGS Quad: DEER CANYON
Size: 7.5 minute series
Year of initial discovery: 1984 Date of most recent observation: 1984-07-06
Directions: NORTH SIDE OF JOHNSON GULCH, ALONG THE ROAD CA. 10 MI. SE. OF GRANT.

Occurrence number: 009 Site name: FRENCH CREEK
County: BEAVERHEAD

Latitude: 451932 Longitude: 1125435 Elevation: 7000
Township & Range: 006S011W Section: 11 Subsection/additional sections: E2,14NE4NW4,2SE4SE4,1W2SW4
USGS Quad: ERMONT
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1989-07-27
Directions: PIONEER MOUNTAINS, SLOPES ALONG WEST SIDE OF FRENCH CREEK, ALONG THE FRENCH CREEK-THIEF CREEK ROAD (BEAVERHEAD N.F. RD. #606) 4 AIR MILES NW. OF ARGENTA; ALSO, MOUTH OF RED GULCH.

Occurrence number: 010 Site name: QUARTZ HILL GULCH
County: BEAVERHEAD

Latitude: 454305 Longitude: 1125509 Elevation: 8000
Township & Range: 001S011W Section: 26 Subsection/additional sections: E2SE4
USGS Quad: VIPOND PARK
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1986-07-08
Directions: HEAD OF QUARTZ HILL GULCH, ALONG BEAVERHEAD N.F. RD. 187; 0.7 AIR MILES ENE. OF GRAY JOCKEY PEAK, CA. 5 AIR MI. SSE. OF WISE RIVER, PIONEER MOUNTAINS.

Occurrence number: 011 Site name: ECHO GULCH
County: BEAVERHEAD

Latitude: 454231 Longitude: 1125445 Elevation: 8100
Township & Range: 001S011W Section: 36 Subsection/additional sections: W2,35E2SE4
USGS Quad: VIPOND PARK
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1986-07-08
Directions: NEAR HEAD OF ECHO GULCH, SLOPES 0-0.5 AIR MI. N. OF VIPOND PARK, ALONG BEAVERHEAD N.F. RD. 187; 0.5-0.75 AIR MI. W. AND SW. OF QUARTZ HILL, PIONEER MOUNTAINS.

Occurrence number: 012 Site name: RED BUTTE
County: BEAVERHEAD

Latitude: 451908 Longitude: 1125600 Elevation: 6800
Township & Range: 006S011W Section: 15 Subsection/additional sections: NE4,10S2
USGS Quad: ERMONT
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1989-07-27
Directions: CA. 4.5 AIR MI. NW. OF ARGENTA, CENTERED 0.5 AIR MI. ESE. OF RED BUTTE, RATTLESNAKE CREEK DRAINAGE CA. 1 MI. SE. OF KELLY RESERVOIR, PIONEER MOUNTAINS.

TABLE 1. (cont.).

Occurrence number: 013 Site name: BLACK MOUNTAIN ROAD
County: BEAVERHEAD

Latitude: 451749 Longitude: 1125745 Elevation: 7200
Township & Range: 006S011W Section: 21 Subsection/additional sections: W2SE4NE4,20SE4SE4
USGS Quad: ERMONT
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1986-06-20
Directions: CA. 5 AIR MI WNW. OF ARGENTA, ALONG BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. #2400) CA. 3 AIR MI. SSE. OF BLACK MOUNTAIN, PIONEER MOUNTAINS.

Occurrence number: 014 Site name: ERMONT GULCH
County: BEAVERHEAD

Latitude: 451603 Longitude: 1125646 Elevation: 6740
Township & Range: 006S011W Section: 33 Subsection/additional sections: NE4SE4,34W2
USGS Quad: ERMONT
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1989-07-27
Directions: CA 4.3 AIR MI. WSW. OF ARGENTA, ALONG BEAVERHEAD N.F. RD. #7467 AT HEAD OF ERMONT GULCH, CA. 2.2 AIR MI. N. OF BADGER PASS, PIONEER MOUNTAINS.

Occurrence number: 015 Site name: ROBERTS GULCH
County: BEAVERHEAD

Latitude: 450025 Longitude: 1131908 Elevation: 6520
Township & Range: 009S014W Section: 33 Subsection/additional sections: N2SE4
USGS Quad: COYOTE CREEK
Size: 7.5 minute series
Year of initial discovery: 1986 Date of most recent observation: 1986-06-22
Directions: MOUTH OF ROBERTS GULCH, CA. 1 AIR MI. NW. OF BLOODY DICK CREEK, CA. 12.5 AIR MI. WEST OF GRANT AND 6.5 AIR MI. ENE. OF LEMHI PASS.

Occurrence number: 016 Site name: TRAPPER CREEK
County: BEAVERHEAD

Latitude: 453913 Longitude: 1125154 Elevation: 6800
Township & Range: 002S010W Section: 20 Subsection/additional sections: W2SE4
USGS Quad: CATTLE GULCH
Size: 7.5 minute series
Year of initial discovery: 1987 Date of most recent observation: 1987-06-16
Directions: PIONEER MOUNTAINS, TRAPPER CREEK DRAINAGE, ALONG BEAVERHEAD N.F. RD. #188; ABOUT 10 MILES WEST OF MELROSE; ABOUT 1 AIR MILE SSE. OF ORE CAMP HILL.

Occurrence number: 017 Site name: BROWNES LAKE
County: BEAVERHEAD

Latitude: 453131 Longitude: 1124947 Elevation: 6650
Township & Range: 003S010W Section: 34 Subsection/additional sections: S2SW4
USGS Quad: STORM PEAK
Size: 7.5 minute series
Year of initial discovery: 1987 Date of most recent observation: 1987-06-17
Directions: PIONEER MOUNTAINS, ROCK CREEK DRAINAGE, ALONG ROCK CREEK ROAD ABOUT 6 MILES WEST OF I-15, NEAR WEST END OF BROWNES LAKE.

TABLE 1. (cont.).

Occurrence number: 018 Site name: KEARNS CREEK
County: BEAVERHEAD

Latitude: 451853 Longitude: 1125651 Elevation: 6900
Township & Range: 006S011W Section: 16 Subsection/additional sections: NE4,15N2SW4,S2NW4
USGS Quad: ERMONT
Size: 7.5 minute series
Year of initial discovery: 1987 Date of most recent observation: 1988
Directions: PIONEER MOUNTAINS, KEARNS CREEK, ADJACENT TO SILVER RULE MINE; ABOUT 0.5 AIR MILE SOUTHWEST OF RED BUTTE; ABOUT 0.75 AIR MILE WEST OF RATTLESNAKE CREEK.

Occurrence number: 019 Site name: BADGER PASS NORTH
County: BEAVERHEAD

Latitude: 451437 Longitude: 1125648 Elevation: 6980
Township & Range: 007S011W Section: 09 Subsection/additional sections: NE4NE4,10NW4,3SW4
USGS Quad: BANNACK
Size: 7.5 minute series
Year of initial discovery: 1987 Date of most recent observation: 1989-07-28
Directions: SOUTHERN PIONEER MOUNTAINS, 0.7-1.2 AIR MILES NNE. OF BADGER PASS; ABOUT 15 AIR MILES WEST OF DILLON.

Occurrence number: 020 Site name: SELWAY CREEK
County: BEAVERHEAD

Latitude: 450647 Longitude: 1132524 Elevation: 7200
Township & Range: 008S015W Section: 27 Subsection/additional sections: SW4NE4
USGS Quad: KITTY CREEK
Size: 7.5 minute series
Year of initial discovery: 1987 Date of most recent observation: 1989-06-29
Directions: BLOODY DICK CREEK DRAINAGE, SLOPES ABOVE SELWAY CREEK, ABOUT 2 MILES SOUTHEAST OF RESERVOIR LAKE; ABOUT 4 MILES EAST OF MONTANA-IDAHO STATE LINE.

Occurrence number: 022 Site name: MEDICINE LODGE CREEK
County: BEAVERHEAD

Latitude: 444359 Longitude: 1130224 Elevation: 6970
Township & Range: 013S012W Section: 03 Subsection/additional sections: SE4NE4,NE4SE4
USGS Quad: TEPEE MOUNTAIN
Size: 7.5 minute series
Year of initial discovery: 1987 Date of most recent observation: 1987-
Directions: MEDICINE LODGE CREEK DRAINAGE, 0.15 AIR MILES WNW OF CONFLUENCE OF MEDICINE LODGE AND HILDRETH CREEKS, CA. 19 AIR MILES SOUTH OF GRANT.

Occurrence number: 023 Site name: MINER CREEK
County: BEAVERHEAD

Latitude: 452017 Longitude: 1133135 Elevation: 7080
Township & Range: 006S016W Section: 02 Subsection/additional sections: SE4
USGS Quad: MINER LAKE
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-30
Directions: BIGHOLE VALLEY, CA. 6 MILES SOUTHWEST OF JACKSON, NORTH OF F.S. ROAD 182.

TABLE 1. (cont.).

Occurrence number: 024 Site name: FROG CREEK
County: BEAVERHEAD

Latitude: 450203 Longitude: 1131959 Elevation: 7280
Township & Range: 009S014W Section: 21 Subsection/additional sections: SW4
USGS Quad: COYOTE CREEK
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: HORSE PRAIRIE, CA. 1 MILE NORTHWEST OF HORSE PRAIRIE GUARD STATION.

Occurrence number: 025 Site name: BRISTON LANE
County: BEAVERHEAD

Latitude: 453145 Longitude: 1133208 Elevation: 6260
Township & Range: 003S016W Section: 35 Subsection/additional sections: NE4,S2
USGS Quad: HIGHLAND RANCH
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-30
Directions: CA. 5.5 MILES SSW OF WISDOM. CA. 3.5 MILES ALONG BRISTON LANE, JUST WEST OF THE ROAD.

Occurrence number: 026 Site name: SWAMP CREEK
County: BEAVERHEAD

Latitude: 453607 Longitude: 1133446 Elevation: 6260
Township & Range: 003S016W Section: 04 Subsection/additional sections: E2
USGS Quad: HIGHLAND RANCH
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-30
Directions: BIGHOLE VALLEY, CA. 5.2 MILES WEST OF WISDOM, ALONG SWAMP CREEK RD., SOUTH OF ROAD.

Occurrence number: 027 Site name: HORSE PRAIRIE GUARD STATION
County: BEAVERHEAD

Latitude: 450117 Longitude: 1131839 Elevation: 6690
Township & Range: 009S014W Section: 27 Subsection/additional sections: NW4SW4
USGS Quad: COYOTE CREEK
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: HORSE PRAIRIE, CA. 0.5 MILES SE OF HORSE PRAIRIE GUARD STATION.

Occurrence number: 028 Site name: BLOODY DICK CREEK I
County: BEAVERHEAD

Latitude: 450017 Longitude: 1132132 Elevation: 6600
Township & Range: 009S014W Section: 31 Subsection/additional sections: W2,SE4;T10SR14W:5NW4
USGS Quad: COYOTE CREEK
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: HORSE PRAIRIE, ALONG BLOODY DICK CREEK, CA. 7.1 MILES WEST OF RED BUTTE.

TABLE 1. (cont.).

Occurrence number: 029 Site name: BLOODY DICK CREEK II
County: BEAVERHEAD

Latitude: 445947 Longitude: 1132048 Elevation: 4440
Township & Range: 010S014W Section: 05 Subsection/additional sections: NW4;4N2
USGS Quad: EVERSON CREEK
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: HORSE PRAIRIE, CA. 5.1 MILES WEST OF RED BUTTE, ALONG BLOODY DICK CREEK ROAD.

Occurrence number: 032 Site name: POLARIS
County: BEAVERHEAD

Latitude: 452237 Longitude: 1130715 Elevation: 6400
Township & Range: 005S012W Section: 30 Subsection/additional sections: NE4NE4,19SE4SE4
USGS Quad: POLARIS
Size: 15 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-28
Directions: GRASSHOPPER CREEK RD., CA. 0.5 MILES NORTH OF POLARIS, CA. 0.1 MILE NORTH OF GRASSHOPPER CREEK CROSSING, IMMEDIATELY NORTH OF GRAVEL PIT.

Occurrence number: 033 Site name: SHALE CREEK
County: BEAVERHEAD

Latitude: 452428 Longitude: 1130659 Elevation: 6560
Township & Range: 005S012W Section: 08 Subsection/additional sections: SW4SW4
USGS Quad: POLARIS
Size: 15 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-28
Directions: GRASSHOPPER CREEK RD., CA. 2.5 MILES NORTH OF POLARIS, ON CREST OF HILL.

Occurrence number: 034 Site name: BLOODY DICK CREEK III
County: BEAVERHEAD

Latitude: 450102 Longitude: 1132318 Elevation: 6600
Township & Range: 009S015W Section: 25 Subsection/additional sections: SW4
USGS Quad: KITTY CREEK
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: BLOODY DICK CREEK RD., CA. 0.75 MILE SOUTH OF EAST PETERSON CREEK.

Occurrence number: 035 Site name: DUTCH CREEK
County: BEAVERHEAD

Latitude: 450250 Longitude: 1132430 Elevation: 6760
Township & Range: 009S015W Section: 14 Subsection/additional sections: SW4,23NE4
USGS Quad: KITTY CREEK
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: BLOODY DICK CREEK RD., CA. 0.25 MILE NORTH AND 0.3 MILE SOUTH OF DUTCH CREEK.

TABLE 1. (cont.).

Occurrence number: 036 Site name: BLANCHARD POND
County: BEAVERHEAD

Latitude: 451603 Longitude: 1132630 Elevation: 6880
Township & Range: 006S015W Section: 33 Subsection/additional sections: NE4SE4
USGS Quad: JACKSON
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-30
Directions: BIG HOLE RIVER DRAINAGE, SKINNER MEADOWS RD., CA. 6.5 MILES SSW OF JACKSON.

RAVALLI COUNTY

Occurrence number: 004 Site name: NORTH FORK RYE CREEK
County: RAVALLI

Latitude: 455855 Longitude: 1140204 Elevation: 4320
Township & Range: 003N020W Section: 25 Subsection/additional sections: NW4SW4,SW4NW4
USGS Quad: ROBBINS GULCH
Size: 7.5 minute series
Year of initial discovery: 1952 Date of most recent observation: 1989-06-26
Directions: WESTERN FOOTHILLS OF THE SAPPHIRE MOUNTAINS, NORTH FORK RYE CREEK DRAINAGE, EAST SIDE OF BITTERROOT N.F. RD. #321, 0.2 AND 0.35 MILES NORTH OF RYE CREEK RD. (#75), CA. 7.5 AIR MILES ESE OF DARBY.

Occurrence number: 007 Site name: MEDICINE TREE CREEK
County: RAVALLI

Latitude: 455426 Longitude: 1140459 Elevation: 4150
Township & Range: 002N020W Section: 21 Subsection/additional sections: NE4SE4,SW4NE4
USGS Quad: ROBBINS GULCH
Size: 7.5 minute series
Year of initial discovery: 1950 Date of most recent observation: 1989-06-29
Directions: EAST FORK BITTERROOT RIVER DRAINAGE, NORTH SIDE OF U.S. HWY. 93, 0.1 MI. WEST OF MEDICINE TREE CREEK, AND 0.3 AIR MI. NORTHWEST OF HWY. BRIDGE OVER CREEK, CA. 2.5 MILES SOUTHEAST OF CONNER.

Occurrence number: 030 Site name: SPRING GULCH
County: RAVALLI

Latitude: 455925 Longitude: 1140116 Elevation: 5200
Township & Range: 003N020W Section: 24 Subsection/additional sections: SE4SE4
USGS Quad: ROBBINS GULCH
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-27
Directions: WESTERN FOOTHILLS OF SAPPHIRE MOUNTAINS, RYE CREEK DRAINAGE, SPRING GULCH, 1.15 AIR MILES NORTHEAST OF CONFLUENCE OF RYE CREEK AND NORTH FORK RYE CREEK, CA. 8 AIR MILES ESE OF DARBY.

TABLE 1. (cont.).

Occurrence number: 031 Site name: ROBBINS GULCH
County: RAVALLI

Latitude: 455547 Longitude: 1140548 Elevation: 4500
Township & Range: 002N020W Section: 16 Subsection/additional sections: N2NW4,9SE4SW4
USGS Quad: ROBBINS GULCH
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-06-29
Directions: WESTERN FOOTHILLS OF SAPPHIRE MOUNTAINS, EAST FORK BITTERROOT RIVER DRAINAGE, ROBBINS GULCH, NORTH OF BITTERROOT N.F. RD. #446, CA. 1 MILE NORTHEAST OF U.S. HWY. 93.

Occurrence number: 037 Site name: WOODS CREEK
County: RAVALLI

Latitude: 453344 Longitude: 1142055 Elevation: 5440
Township & Range: 003S022W Section: 20 Subsection/additional sections: 19,21
USGS Quad: PAINTED ROCKS LAKE (15)
Size: 7.5 minute series
Year of initial discovery: 1989 Date of most recent observation: 1989-
Directions: WOODS CREEK, PAST PAINTED ROCKS RESERVOIR.

2. **Populations known or assumed extirpated (Montana):** Prior to 1989, two historical records were known in Ravalli County:

   a. 1950: T.G. & V.C. McCall (352), MONTU (49394), "(b)etween Conner and Sula, on rocky hillside above river."

   b. 1952: J.C. Wright s.n., MONT, "10 miles east of Darby, Sapphire Mountains foothills, sandy granitic soil, ponderosa pine zone."

   These areas were emphasized during field surveys in 1989. Although the original label data from both collections are general in nature, it is believed that both collection sites, or populations very near to them, were rediscovered. The element occurrence print-outs for these sites (007 and 004, respectively) are provided on pp. 59 and 56.

3. **Historically known populations where current status is not known:** In Montana, one population in Beaverhead County (Medicine Lodge Creek, 022; see p. 74) has been reported by J. Christensen (Beaverhead National Forest). Surveys adjacent to this location did not reveal any populations (L. Schassberger, MTNHP, pers. comm.); access to the site itself was not possible because permission to cross private land could not be obtained.

   Another population in Beaverhead County, Montana (021; see p. 73) is based on the following specimen:

   a. 1947: Frank H. Rose (3502), MONTU (092520), "(w)est of Big Hole Battlefield."

   Although P. lemhiensis is recently documented from the Big Hole National Battlefield proper, surveys have not yet been conducted in areas west of the battlefield. It is likely, however, that the species is extant in this area.

   Four records in Idaho are based on historical collections, taken in 1920, 1937, 1938, and 1946; details on these collections are available from the Idaho Natural Heritage Program.

4. **Locations not yet investigated believed likely to support additional natural populations:** The following areas in Beaverhead County, Montana may support populations: Big Hole Divide, south of Big Hole Pass; west Pioneer Mountains, including the upper Grasshopper Creek and Wise River drainages; east slope of the Beaverhead Mountains, between Jackson and Wisdom.

   In southern Ravalli County, potential habitat exists at low to mid-elevations in most major drainages; a recent report from the Woods Creek drainage (036; tributary of the West Fork Bitterroot River) substantiates the need for additional surveys in this region. However, P. lemhiensis may in fact be relatively rare here; the four Ravalli County populations located during 1989 surveys were widely scattered, and three of these were very small in size.

5. **Reports having ambiguous or incomplete locality information:** None known.

6. **Locations known or suspected to be erroneous reports:** None known.

C. **Biogeographical and phylogenetic history:** The diversity of habitat types occupied by P. lemhiensis is fairly wide, which is unique considering the narrow geographic range of the species. In Montana, the known populations occur at elevations from 4,150 feet along the East Fork of the Bitterroot River, to 8,100 feet in the northeastern Pioneer Mountains. As a result, the plant communities with which P. lemhiensis is associated are highly varied. At the lowest elevations in Ravalli County it occurs in dry foothills habitats, and is associated with Pinus ponderosa and Purshia tridentata. Most of the known sites in Beaverhead County, however, are associated with Artemisia tridentata and various bunchgrasses, especially Agropyron spicatum and Festuca idahoensis; the majority of these populations are very close to, and often extend into, the lower edges of the Pseudotsuga menziesii forest zone. The sites at the highest known elevations in Montana, near Vipond Park in the northeastern Pioneer Mountains, are actually associated with Pinus contorta, and occur in moist forb meadows and on open slopes. This wide ecological tolerance, in a species with a narrow geographic distribution, suggests that the range of P. lemhiensis may be most closely related to its evolutionary history, since it is apparently not strictly confined to a single

vegetation type or unusual geologic substrate.

Within the subgenus Habroanthus, P. lemhiensis is one of five closely related species occurring in the Pacific Northwest region; these also include P. cyaneus, P. payettensis, P. pennellianus, and P. speciosus. Of these latter four, only the first two also occur in Montana. Although they are superficially similar, these species are "technically well-marked taxa which occupy distinctive and hardly overlapping geographic areas" (Hitchcock et al. 1959). The above ecological and systematic observations suggest that a common ancestor may have given rise, through adaptive radiation, to this complex of regional endemics. Alternatively, it has been hypothesized that P. lemhiensis arose via hybridization between P. cyaneus and P. speciosus, followed by segregation and isolation (Keck 1940). Chromosome counts for all of these species would be useful in evaluating this possibility (Ramstetter 1983); P. speciosus appears to be a diploid species with n = 8, but chromosome counts for the other species have not been published (Clark 1971).

6. General environment and habitat description.

A. Concise statement of general environment and habitat: In Montana, P. lemhiensis occurs predominantly on moderate to steep, east- to southwest-facing slopes, often in open soil areas. At some sites, the populations occur partially or wholly on roadbanks. The populations are found on several geologic substrates, including granite and limestone. Associated vegetation types are most often dominated by Artemisia tridentata and bunchgrasses, including Agropyron spicatum and Festuca idahoensis; P. lemhiensis is also associated with Pinus ponderosa/Purshia tridentata, Pseudotsuga menziesii, and Pinus contorta forest types in parts of its range. The populations in Montana occur at elevations from 4,150 to 8,100 feet.

B. Physical characteristics.

1. Climate.

a. Koppen climate classification: Type Dfb (Canadian climate), with snowy winters and moderately warm summers (Visher 1954).

b. Regional macroclimate: The climate of southwestern Montana can generally be

classified as cool and dry, with locally greater amounts of precipitation in the mountains; there are numerous summer thunderstorms. For the distributional area of P. lemhiensis in Montana, the nearest climatological stations are located in Darby (1180 m (3880 ft.)), Dillon (1590 m (5215 ft.)), and Wisdom (1850 m (6068 ft.)). Data for the period 1951-1980 are provided by the U.S. Department of Commerce (1982). At Darby, the mean annual precipitation was 40.11 cm (15.79 in.); the mean annual temperature was 7.44°C (45.4°F), and the mean July maximum temperature was 28.83°C (83.9°F). At Dillon, the mean annual precipitation was 24.21 cm (9.53 in.); the mean annual temperature was 5.9°C (42.6°F), and the mean July maximum temperature was 28.5°C (83.3°F). At Wisdom, the mean annual precipitation was 29.06 cm (11.44 in.); the mean annual temperature was 1.7°C (35.1°F), and the mean July maximum temperature was 25.7°C (78.2°F).

c. **Local microclimate:** Penstemon lemhiensis generally occurs on open slopes with east to southwest exposures. These sites are likely to have comparatively warm microclimates.

2. **Air and water quality requirements:** Unknown.

3. **Physiographic province:** The range of P. lemhiensis lies in the Rocky Mountains and Idaho batholith provinces, within the Rocky Mountain System, as mapped by Hunt (1974).

4. **Physiographic and topographic characteristics:** The geologic structure of southwestern Montana is highly complex, consisting of many types of sedimentary and igneous rocks. The major formations with which P. lemhiensis is associated include the intrusive granitic rocks of the Idaho batholith, Cenozoic Tertiary sediments of the Willow Creek formation, the Precambrian Upper Belt formations of the Piegan and Missoula groups, and the Paleozoic Mississippian, Pennsylvanian, and Permian formations (Perry 1962).

The Big Hole Basin appears to be underlain by Tertiary lake beds; these beds are generally

overlain by bench gravels of Pleistocene age and by glaciofluvial alluvium on the broad bottom lands. In the vicinity of Sula in the upper Bitterroot River drainage, most of the rock exposed near the drainage bottoms is granitic; some pre-Cambrian sedimentary and Tertiary volcanic rocks are exposed in places. The bottom lands in this area are alluvium (Alden 1953).

In Montana, populations of P. lemhiensis are most often found on steep, east- to southwest-facing slopes. A few sites have been found on northeast- and northwest-facing slopes. In a few locations (i.e., Trail Creek (002), Big Hole Battlefield (006)), the populations occur partially on level ground. For four sites studied in Montana, Ramstetter (1983) found the slopes to range from 20-45%.

The recently verified sites in Montana range from 1265 m (4,150 ft.) to 2470 m (8,100 ft.) in elevation.

In Montana, P. lemhiensis occurs in the Beaverhead, Big Hole, Bitterroot, and Red Rock river drainages. These areas are within hydrologic unit numbers 10020002, 10020004, 17010205, and 10020001, respectively, as mapped by the U.S. Geological Survey (1980).

5. **Edaphic factors:** Within appropriate habitat, Penstemon lemhiensis prefers areas that are more sparsely vegetated. The soils in these microhabitats are often very gravelly. However, the soil texture is highly variable; P. lemhiensis has been found in soils ranging from fine clay to sand (Ramstetter 1983). During the course of field surveys by the MTNHP from 1986 to 1989, the species has been found most often in soil areas characterized as gravelly loams.

Ramstetter (1983) obtained measurements of soil moisture content from three sites at the Big Hole National Battlefield population. The percent water in soil (fresh-dry weight/dry weight) ranged from 7 to 22 percent, at a soil depth of 20 cm, on 2 July 1982. On 28 August 1982, these values ranged from 4 to 7 percent.

Penstemon lemhiensis is not restricted to any particular geological substrate; known sites

have been found on granitic soils, as well as limestone and other sedimentary substrates.

6. **Dependence of this taxon on natural disturbance:** It appears that P. lemhiensis has some degree of adaptation to natural disturbance, as evidenced by its ecological preference for more open microhabitats, i.e., rock outcrop areas and steep rocky slopes with some natural soil slippage.

7. **Other unusual physical features:** None observed.

C. **Biological characteristics.**

1. **Vegetation physiognomy and community structure:** In Montana, P. lemhiensis is associated with a.) sagebrush-bunchgrass steppe, b.) savanna-like pine-shrub communities, c.) temperate evergreen conifer forests dominated by trees with more or less conical crowns, and d.) ecotones between the steppe and conifer forest types.

2. **Regional vegetation types:** Penstemon lemhiensis occurs in four climax vegetation types as mapped by Ross and Hunter (1976): a.) Subalpine fir/Douglas-fir/Ponderosa Pine climax forest, b.) Subalpine fir/Douglas-fir climax forest, c.) Silty Range site, 10-14" precipitation zone, with bluebunch wheatgrass, prairie junegrass, etc., and d.) Silty Range site, 15-19" precipitation zone, with Idaho fescue, bluebunch wheatgrass, etc. The range of the species lies largely within the Douglas-fir Forest Section of the Rocky Mountain Forest Province, with a minor portion in the Cedar-Hemlock-Douglas-fir Forest Section of the Columbia Forest Province, as mapped by Bailey (1976).

3. **Frequently associated species:** In Beaverhead County, Montana, Penstemon lemhiensis generally occurs in areas below or near the lower tree line of forests dominated by Pseudotsuga menziesii and/or Pinus contorta. The associated vegetation is most often dominated by Artemisia tridentata and bunchgrasses, including Agropyron spicatum and Festuca idahoensis. Other native plant species associated with P. lemhiensis at one or more locations include:

Achillea millefolium (common yarrow)
Antennaria microphylla (rosy pussytoes)
Artemisia frigida (fringed sagewort)
Aster stenomeres (northwest aster)
Astragalus miser (weedy milkvetch)
Balsamorhiza sagittata (arrowleaf balsamroot)
Berberis repens (creeping oregongrape)
Chrysothamnus nauseosus (common rabbit-brush)
Chrysothamnus viscidiflorus (green rabbit-brush)
Comandra umbellata (bastard toad-flax)
Eriogonum umbellatum (sulphur buckwheat)
Geranium viscosissimum (sticky geranium)
Geum triflorum (old man's whiskers)
Helianthella quinquenervis (nodding helianthella)
Juniperus communis (common juniper)
Juniperus scopulorum (Rocky Mountain juniper)
Koeleria cristata (prairie junegrass)
Lupinus leucophyllus (velvet lupine)
Lupinus sericeus (silky lupine)
Pedicularis contorta (coiled-beak lousewort)
Penstemon aridus (stiff-leaf penstemon)
Penstemon procerus (littleflower penstemon)
Penstemon radicosus (mat-root penstemon)
Phacelia heterophylla (varileaf phacelia)
Phacelia linearis (threadleaf phacelia)
Poa secunda (Sandberg's bluegrass)
Rosa woodsii (woods rose)
Sedum borschii (Borsch's stonecrop)
Sedum lanceolatum (lance-leaved stonecrop)
Senecio canus (woolly groundsel)
Sitanion hystrix (bottlebrush squirreltail)
Townsendia parryi (Parry's townsendia)

Additional associated species reported by Ramstetter (1983) include:

Castilleja spp. (paintbrush)
Collinsia parviflora (small-flowered blue-eyed Mary)
Erigeron compositus (cut-leaved daisy)
Frasera albicaulis (white-stemmed frasera)
Hieracium cynoglossoides (houndstongue hawkweed)
Lithospermum ruderale (wayside gromwell)
Orthocarpus tenuifolius (thin-leaved owl clover)
Potentilla gracilis (northwest cinquefoil)

Associated introduced species include:

Bromus inermis (smooth brome)
Bromus tectorum (cheatgrass brome)
Cynoglossum officinale (common hound's-tongue)
Poa pratensis (Kentucky bluegrass)
Tragopogon dubius (yellow salsify)

The sites occurring at the highest elevations (Quartz Hill Gulch (010), Echo Gulch (011)), in the northeastern Pioneer Mountains, occur in openings in forests dominated by Pinus contorta, and to a lesser extent, Pseudotsuga menziesii. Artemisia tridentata is not an associated species at these locations. These openings are dominated by forb species, most notably Astragalus miser, Pedicularis contorta, and Townsendia parryi. These two sites are ecologically distinct from those found in the sagebrush areas to the south and west.

In Ravalli County, Montana, P. lemhiensis occurs in the dryer Pinus ponderosa/Purshia tridentata habitat type. Associated species in this area include:

Agropyron spicatum (bluebunch wheatgrass)
Alyssum alyssoides (pale alyssum)
Arabis holboellii (Holboell's rockcress)
Balsamorhiza sagittata (arrowleaf balsamroot)
Bromus tectorum (cheatgrass)
Centaurea maculosa (spotted knapweed)
Geranium viscosissimum (sticky geranium)
Koeleria cristata (prairie junegrass)
Lithospermum ruderale (wayside gromwell)
Melilotus officinalis (yellow sweet-clover)
Penstemon albertinus (Alberta penstemon)
Phacelia heterophylla (varileaf phacelia)
Phacelia linearis (threadleaf phacelia)
Physaria geyeri (Geyer's twinpod)
Verbascum thapsus (flannel mullein)

4. **Dominance and frequency of the taxon:** Most populations of P. lemhiensis consist of scattered individuals; the percent canopy cover of the species is generally less than 5%. Portions of the French Creek (009) site contain dense subpopulations, and canopy cover of P. lemhiensis in some small areas is approximately 10-20%. In 1989, three demographic monitoring transects were established in Beaverhead County (two at French Creek (009), one at Badger Pass North (019)), all on Beaverhead National Forest lands. The density (plants/m^2) in these three

transects ranged from 1.4 to 3.5 (Shelly 1990b).

5. **Successional phenomena:** As discussed above, P. lemhiensis appears to have an ecological preference for more open, often unstable, microhabitats; these include rock outcrop areas and steep rocky slopes with some natural soil slippage. This adaptation is further evidenced by situations where plants have colonized open roadbanks (i.e., Argenta (001), Trail Creek (002), Polaris (032)). The species is never abundant, and is likely to be ephemeral, in these disturbed situations. All known sites are in open habitats, and the species would probably be intolerant of canopy closure.

6. **Dependence on dynamic aspects of biotic associations and ecosystem features:** Unknown.

7. **Other endangered, threatened, rare, or vulnerable species occurring in habitat(s) of this taxon:** None known in Montana.

7. **Population biology of the taxon.**

A. **General summary:** In Montana, populations range in size from single, isolated plants to 1,845 or more individuals; these populations contain from one to 13 subpopulations. During the period 1986-1989, drastic declines have been noted in three populations. Penstemon lemhiensis does have some capacity to colonize disturbed areas, and is occasionally frequent in such situations, but the plants in such areas are probably ephemeral. Studies of pollination biology revealed a possibly close relationship with a species of vespid wasp (Pseudomasaris vespoides), and Penstemon lemhiensis appears to be an obligate out-crosser (Ramstetter 1983). Demographic monitoring transects established in 1989 revealed the presence of relatively few seedlings, but the timing of seed germination and establishment is unknown.

B. **Demography.**

1. **Known populations:** Thirty-five recently documented populations are known in Montana. The average population size is approximately 128. The total number of plants observed in Montana to date is approximately 4,420-4,525. The populations in Montana are sparsely scattered over an area of approximately 3,500

square miles.

2. **Demographic details (Montana):** See Table 2, pp. 27-30.

Eight previously documented populations (002, 003, 005, 009, 012, 014, 019, 020) were revisited in 1989. Of these eight, drastic decreases in population size were noted in three of them (Badger Pass (005), Red Butte (012), Ermont Gulch (014)). At Badger Pass, 190 plants were counted in 1986, approximately 75 of which were within an exclosure constructed to protect part of the population. During 1989, however, only 5-10 plants were observed, most of them on a roadbank; none were found within the exclosure. Similarly, 142 plants were counted in the main subpopulation at Red Butte in 1986; no plants were found there in 1988, and only ca. 12 plants were seen in 1989. Seventy-six plants were counted in the Ermont Gulch population in 1986, but only one plant was observed in 1989. The reasons for these declines are unknown; many of the plants may have been dormant in 1989, or they may have actually been extirpated. Monitoring of these sites should be continued, to determine whether these observed declines are permanent.

An increase in population size was noted at the Dutch Creek (035) site; during 1987, only one plant was observed there, on an open roadbank; searches in undisturbed habitat on slopes above the road did not reveal any other plants. In 1989, approximately 28 plants were located in the same area. This information suggests that the plants can be periodically dormant, and that observed population size may fluctuate from year to year as a result.

C. **Phenology.**

1. **Patterns:** In Montana, Penstemon lemhiensis is in bloom from early June to late July, depending upon climatic conditions and elevation. On some very warm, exposed sites, such as south-facing roadbanks where the species has been sporadically found, it may begin blooming by late May. Mature fruits are present during August and early September, and seeds are dispersed sporadically from the dehiscing capsules during that time. At the

TABLE 2. Demographic details, listed by county and occurrence number.

BEAVERHEAD COUNTY

Occurrence number: 001 Site name: ARGENTA
County: BEAVERHEAD
Acreage: 10
Population data: 206 PLANTS COUNTED IN 1986 (204 ON PRIVATE INHOLDING, 2 ON U.S.F.S. LAND); 100 PLANTS COUNTED IN 1988 (K. SCOW); A FEW PLANTS OCCUR ON ROADBANKS; LOW LEVEL OF GRAZING; WEED INVASION ALONG THE ROAD.

Occurrence number: 002 Site name: TRAIL CREEK
County: BEAVERHEAD
Acreage: 13
Population data: 70-100 PLANTS, 6 SUBPOPULATIONS; IN FULL FLOWER; MOST PLANTS OCCUR ALONG ROADSIDE.

Occurrence number: 003 Site name: LEMHI PASS
County: BEAVERHEAD
Acreage: 15
Population data: 164 PLANTS COUNTED, 3 SUBPOPULATIONS; CA. 90% OF THE PLANTS OCCUR ON NATIVE SAGEBRUSH SLOPES ABOVE THE ROAD; SPECIES OCCURS IN MORE OPEN, GRAVELLY AREAS.

Occurrence number: 005 Site name: BADGER PASS
County: BEAVERHEAD
Acreage: 10
Population data: 1986: 190 PLANTS COUNTED; CA. 75 PLANTS ARE WITHIN A FENCE EXCLOSURE, WHICH WAS CONSTRUCTED TO PROTECT PART OF THE POPULATION. 1989: VERY FEW PLANTS OBSERVED, AND NONE FOUND INSIDE EXCLOSURE.

Occurrence number: 006 Site name: BIG HOLE NATIONAL BATTLEFIELD
County: BEAVERHEAD
Acreage: 50
Population data: THREE SUBPOPULATIONS, WITH 447 PLANTS (S. OF "SIEGE AREA" & ROADCUT ALONG SLOPE), "HUNDREDS" (N. OF "SIEGE AREA"), AND CA. 40 BELOW VISITOR'S CENTER; NO PLANTS FOUND OUTSIDE BATTLEFIELD BOUNDARIES.

Occurrence number: 008 Site name: JOHNSON GULCH
County: BEAVERHEAD
Acreage: 0
Population data: ONE PLANT (SPECIMEN IS ONE TOPSNATCHED STEM).

Occurrence number: 009 Site name: FRENCH CREEK
County: BEAVERHEAD
Acreage: 40
Population data: 138 PLANTS COUNTED (CA. 150 TOTAL) IN MAIN POPULATION, WITH 22 PLANTS COUNTED IN SUBPOPULATION AT THE MOUTH OF RED GULCH (1986); 1845 PLANTS, IN 13 SUBPOPULATIONS, COUNTED IN 1988 (K. SCOW); AREA SUBJECT TO MINING DISTURBANCE; TWO MONITORING TRANSECTS ESTABLISHED IN 1989.

Occurrence number: 010 Site name: QUARTZ HILL GULCH
County: BEAVERHEAD
Acreage: 15
Population data: 203 PLANTS COUNTED, IN FLOWER; NEARBY AREAS SUBJECT TO MINING DISTURBANCE.

TABLE 2. (cont.).

Occurrence number: 011 Site name: ECHO GULCH
County: BEAVERHEAD
Acreage: 45
Population data: 252 PLANTS COUNTED IN SOUTH SUBPOPULATION, 100-150 PLANTS IN NORTH SUBPOPULATION; IN FLOWER; MINING TEST PITS OBSERVED NEAR NORTH SUBPOPULATION.

Occurrence number: 012 Site name: RED BUTTE
County: BEAVERHEAD
Acreage: 20
Population data: 142 PLANTS COUNTED IN MAIN SUBPOPULATION (CENTRUM), 169 TOTAL, 3 SUBPOPULATIONS (1986); NO PLANTS OBSERVED IN MAIN SUBPOPULATION IN 1988 (K. SCOW), AND ONLY CA. 12 IN 1989 (SHELLY); MAIN POPULATION NEAR, BUT NOT RIGHT ALONG, A LIGHTLY-USED GRAVEL ROAD.

Occurrence number: 013 Site name: BLACK MOUNTAIN ROAD
County: BEAVERHEAD
Acreage: 20
Population data: CA. 100-125 PLANTS TOTAL, MAINLY IN TWO SUBPOPULATIONS AND SCATTERED ALONG ROADSIDE; IN FLOWER.

Occurrence number: 014 Site name: ERMONT GULCH
County: BEAVERHEAD
Acreage: 5
Population data: 76 PLANTS COUNTED (1986); ONLY ONE PLANT SEEN IN 1989; AREA SUBJECT TO MODERATE TO HEAVY GRAZING.

Occurrence number: 015 Site name: ROBERTS GULCH
County: BEAVERHEAD
Acreage: 5
Population data: 54 PLANTS COUNTED; IN FLOWER; HABITAT RELATIVELY UNDISTURBED, SOME GRAZING USE.

Occurrence number: 016 Site name: TRAPPER CREEK
County: BEAVERHEAD
Acreage: 1
Population data: 18 PLANTS COUNTED; FLOWERING; POPULATION OCCURS RIGHT ALONG ROADSIDE.

Occurrence number: 017 Site name: BROWNES LAKE
County: BEAVERHEAD
Acreage: 1
Population data: ONLY 4 PLANTS SEEN, 2 ON ROADSIDE AND 2 ON NATURAL SLOPE ABOVE ROAD.

Occurrence number: 018 Site name: KEARNS CREEK
County: BEAVERHEAD
Acreage: 5
Population data: 52 PLANTS COUNTED, 4 SUBPOPULATIONS (1987); MOST ABUNDANT ON EAST-FACING SLOPE ALONG CREEK, ON GRAVELLY OPEN SLOPE; SOME GRAZING AND MINING ACTIVITY IN THE AREA; FIFTH SUBPOPULATION, CONTAINING 40 PLANTS, LOCATED IN 1988 BY K. SCOW.

TABLE 2. (cont.).

Occurrence number: 019 Site name: BADGER PASS NORTH
County: BEAVERHEAD
Acreage: 4
Population data: ABOUT 200 PLANTS COUNTED, POPULATION = EST. 300+ PLANTS, 3 SUBPOPULATIONS OBSERVED; FLOWERING; NUMEROUS PLANTS GROWING THROUGH BRANCHES OF SAGEBRUSH SHRUBS; AREA IS LIGHTLY TO MODERATELY GRAZED; PERMANENT MONITORING TRANSECT ESTABLISHED IN 1989.

Occurrence number: 020 Site name: SELWAY CREEK
County: BEAVERHEAD
Acreage: 1
Population data: SIX PLANTS OBSERVED, IN 2 CLUMPS (19 JUNE 1987); FLOWERING; PLANTS ASSOCIATED WITH STEEP ROCK OUTCROP AREAS, AND NOT OBSERVED IN DENSER SURROUNDING VEGETATION. 10 PLANTS OBSERVED IN 1989.

Occurrence number: 022 Site name: MEDICINE LODGE CREEK
County: BEAVERHEAD
Acreage: 20
Population data: UNKNOWN; POPULATION REPORTED TO BE LARGE BY J. CHRISTENSEN.

Occurrence number: 023 Site name: MINER CREEK
County: BEAVERHEAD
Acreage: 10
Population data: UNCOMMON, 17 PLANTS IN 1989.

Occurrence number: 024 Site name: FROG CREEK
County: BEAVERHEAD
Acreage: 1
Population data: 26 PLANTS IN 1989.

Occurrence number: 025 Site name: BRISTON LANE
County: BEAVERHEAD
Acreage: 10
Population data: 110 PLANTS IN 1989.

Occurrence number: 026 Site name: SWAMP CREEK
County: BEAVERHEAD
Acreage: 3
Population data: 23 PLANTS IN 1989.

Occurrence number: 027 Site name: HORSE PRAIRIE GUARD STATION
County: BEAVERHEAD
Acreage: 1
Population data: ONLY 3 PLANTS, ON A ROADCUT.

Occurrence number: 028 Site name: BLOODY DICK CREEK I
County: BEAVERHEAD
Acreage: 2
Population data: 34 PLANTS, FOUR SMALL SUBPOPULATIONS (1989).

Occurrence number: 029 Site name: BLOODY DICK CREEK II
County: BEAVERHEAD
Acreage: 2
Population data: 22 PLANTS, FOUR SMALL SUBPOPULATIONS (1989).

TABLE 2. (cont.).

Occurrence number: 032 Site name: POLARIS
County: BEAVERHEAD
Acreage: 0
Population data: POPULATION OF 50+ PLANTS IN 1989.

Occurrence number: 033 Site name: SHALE CREEK
County: BEAVERHEAD
Acreage: 0
Population data: POPULATION OF 2 PLANTS IN 1989.

Occurrence number: 034 Site name: BLOODY DICK CREEK III
County: BEAVERHEAD
Acreage: 15
Population data: 74 PLANTS IN 3 SUBPOPULATIONS IN 1989.

Occurrence number: 035 Site name: DUTCH CREEK
County: BEAVERHEAD
Acreage: 12
Population data: CA. 30 PLANTS IN 2 SUBPOPULATIONS IN 1989.

Occurrence number: 036 Site name: BLANCHARD POND
County: BEAVERHEAD
Acreage: 1
Population data: 61 PLANTS COUNTED.

RAVALLI COUNTY

Occurrence number: 004 Site name: NORTH FORK RYE CREEK
County: RAVALLI
Acreage: 3
Population data: TWO SUBPOPULATIONS; 72 PLANTS (SOUTH), WITH 65 ON SLOPE ABOVE ROADCUT; 11 PLANTS (NORTH), ALL ON ROADCUT; HABITAT HEAVILY INFESTED WITH WEEDS; LARGEST POPULATION KNOWN IN RAVALLI COUNTY.

Occurrence number: 007 Site name: MEDICINE TREE CREEK
County: RAVALLI
Acreage: 2
Population data: 10 PLANTS OBSERVED, 7 ON ROADCUT, 3 ON SLOPES ABOVE.

Occurrence number: 030 Site name: SPRING GULCH
County: RAVALLI
Acreage: 1
Population data: FOUR PLANTS OBSERVED; ONE FLOWERING, 3 STERILE ROSETTES; HABITAT SERIOUSLY IMPACTED BY KNAPWEED INVASION.

Occurrence number: 031 Site name: ROBBINS GULCH
County: RAVALLI
Acreage: 5
Population data: 14 PLANTS OBSERVED, IN 5 SMALL COLONIES; 8 FLOWERING, 6 ROSETTES, ONE PLANT ON ROADSIDE.

Occurrence number: 037 Site name: WOODS CREEK
County: RAVALLI
Acreage: 0
Population data: 7 PLANTS COUNTED.

Big Hole National Battlefield (006), Ramstetter (1983) found that, in 1982, flower buds began to develop by 12 June, and plants were in bloom by 27 June; all flowers in an inflorescence opened within three to five days. In 1983, most inflorescences at Argenta (001), Badger Pass (005), and Lemhi Pass (003) had dropped their flowers, and fruits were developing, by 23-26 July; at the Battlefield, most flowers had dropped, but no developing fruits were seen. Ramstetter (1983) additionally states that "(o)bservations made in 1982 and 1983 indicate that the sexual reproductive period at higher elevations is somewhat shorter than at lower elevations." In 1986, the peak blooming period at the high-elevation sites in the northeastern Pioneer Mountains (Quartz Hill Gulch (010), Echo Gulch (011)) had just begun on 8 July, indicating that the peak reproductive period is later at these sites.

2. **Relation to climate and microclimate:** As mentioned, plants on warmer exposures may begin flowering earlier in the growing season.

D. **Reproductive ecology.**

1. **Types of reproduction:** The flowers of P. lemhiensis are protandrous (the anthers dehisce before the stigma is receptive); anthers begin to shed pollen approximately two days before the stigma becomes sticky and receptive (Ramstetter 1983).

   Breeding system studies conducted at the Big Hole National Battlefield suggest that P. lemhiensis is an obligate out-crosser (Ramstetter 1983). Plants with flowers that were not manipulated (control) yielded an average of 17.80% mature seed set. In comparison, plants cross-pollinated by hand yielded an average of 22.51% mature seed set, significantly higher than the average for the control plants. Thus, seed set may be somewhat limited by the level of insect pollination. Obligate out-crossing was further suggested in plants that were self-pollinated by hand; an average of only 2.10% mature seed set was obtained. However, open-pollinated flowers whose anthers were removed initiated an average of 17.29% seed set. Little evidence of agamospermy (asexual seed production) was

found. During surveys by the author in 1986, 1987, and 1989, no evidence of any vegetative reproduction was observed.

2. **Pollination.**

   a. **Mechanisms:** As described above, Penstemon lemhiensis appears to be an obligate outcrosser; the primary mechanism is via insect pollination.

   b. **Specific known pollinators:** During observations of insect visitors to P. lemhiensis at the Big Hole National Battlefield, 13 insects that made contact with some part of the flowers were collected (Ramstetter 1983). Of these, two species, Pseudomasaris vespoides and Osmia brevis, were thought to be the most important pollinators. Pseudomasaris vespoides is a pollen-collecting vespid wasp; these wasps have long bodies, and during flower visits they completely enter the corollas. They were not observed to visit flowers of any other plants. Ramstetter (1983) concluded that "(i)f P. vespoides is as constant to Penstemon lemhiensis as my observations indicate, the wasp may be an especially important pollinator." Osmia brevis belongs to the mason bee family (Megachilidae), whose members are known to be efficient pollinators (Essig 1958). During surveys by the author in 1986, 1987 and 1989, the vespid wasp was by far the most frequently observed insect visitor to P. lemhiensis.

   c. **Other suspected pollinators:** Unknown.

   d. **Vulnerability of pollinators:** Unknown, but the primary pollinators (Pseudomasaris vespoides, Osmia brevis) may be vulnerable to management practices such as herbicide and insecticide spraying. Impacts to these insects, especially P. vespoides, may have a detrimental effect on seed set in Penstemon lemhiensis.

3. **Seed dispersal.**

   a. **General mechanisms:** The seeds of P. lemhiensis have no appendages that might aid in long-distance dispersal; they are

irregular in shape, and up to 2 mm in size. It is likely that most seeds simply fall directly to the ground from the dehisced capsules.

b. **Specific agents:** None known or apparent.

c. **Vulnerability of dispersal agents and mechanisms:** Not applicable.

d. **Patterns of propagule dispersal:** Details unknown. In demographic monitoring transects established in 1989, some seedlings were observed; these were always in the vicinity of mature reproductive, and presumably parental, plants (Shelly 1990b).

4. **Seed biology.**

a. **Amount and variation of seed production:** Seed production in three monitoring transects varied only slightly, from 32.7 to 36.0 seeds per fruit; the average number of fruits per fruiting plant ranged from 12.1 to 19.2 (Shelly 1990b). Continuing measurements from these transects will provide information regarding variation in annual seed production.

b. **Seed viability and longevity:** Unknown.

c. **Dormancy requirements:** Unknown.

d. **Germination requirements:** In laboratory seed germination experiments, only seeds that were cold-treated or treated with gibberellic acid (a growth hormone) germinated; it is likely that seeds of P. lemhiensis require a cold treatment prior to germination in the field (Ramstetter 1983).

e. **Percent germination:** In both the cold and gibberellic acid treatments, only about 4% of the seeds germinated after approximately two weeks; most seeds did not germinate at all (Ramstetter 1983). Germination trials have also been conducted by Bitterroot Native Growers (Corvallis, Montana). The following treatments were performed: 1.) seeds were

sewn immediately, and given 70° days/35° nights, and 2.) seeds were sewn in flats and given 35° temperatures for 30, 45, and 60 days; after each time interval, portions of the seed were removed from cold treatment and germination attempts made. None of these treatments resulted in germination. It was thought that this may have been due to the drought year in 1988; additional attempts are currently being made using seed collected in 1989 (P. Burke, pers. comm.).

5. **Seedling ecology:** Details unknown. Ramstetter (1983) felt that because seed dispersal occurs so late in the growing season, germination probably occurs in the spring; the apparent requirement for a cold treatment upholds this hypothesis. In the three monitoring transects established in 1989, very few seedlings were observed (a total of 17 in 100 $1m^2$ plots). Those observed were very small, and it is possible that others within the transects were missed during the studies. Also, numerous seedlings may perish or become dormant earlier in the growing season, as the habitats become drier; such a dormancy pattern has been observed for seedlings of Silene spaldingii, a rare perennial plant species occurring in northwestern Montana. Seedlings of the latter become dormant during the summer months under greenhouse conditions (Lesica 1988).

6. **Survival and mortality:** No quantitative information; future readings of the monitoring transects will provide detailed data. See Section I.7.B.2., p. 26, for a discussion of observed fluctuations in some population sizes.

7. **Overall assessment of taxon's reproductive success:** Although details on rates of seed germination and seedling establishment are largely unknown, these appear fairly low in P. lemhiensis, especially considering the relative abundance of observed seed production. Also, the small average population size suggests that reproductive success is fairly low. Additional studies on the ecology of seed germination and establishment are needed.

8. **Population ecology of the taxon.**

A. **General summary:** Penstemon lemhiensis appears to have a close relationship with a species of pollen-gathering vespid wasp. The plants are susceptible to browsing, probably by deer and cattle; in some populations this impact can be fairly heavy. Although P. lemhiensis shows some tolerance to disturbance based on its occupation of roadbank habitats, the plants are never abundant in such situations, and are vulnerable to road maintenance and weed control activities. In undisturbed sites, it prefers more open microhabitats. These observations suggest that P. lemhiensis has a low tolerance for interspecific competition.

B. **Positive and neutral interactions:** As described in I.7.D.2.b., P. lemhiensis may have a close plant-pollinator relationship with two insects, especially with a vespid wasp (Pseudomasaris vespoides). The latter appears to be faithful to Penstemon lemhiensis, and may represent its most important pollinator. Other positive or neutral interactions are not known.

C. **Negative interactions.**

1. **Herbivores, predators, pests, parasites and diseases:** Penstemon lemhiensis is subject to moderate to heavy browsing, most likely by deer and cattle. Ramstetter (1983) found the percentage of browsed stalks at the Battlefield (006) and Argenta (001) sites to be 23% and 90%, respectively. In three demographic monitoring transects established in 1989 (French Creek (009) and Badger Pass North (019) sites), the percentage of browsed flowering stems ranged from 3.0 to 47.8% (Shelly 1990b). Also, Ramstetter (1983) found no plants outside the Battlefield; the park is fenced, and is not used for livestock grazing. Similarly, during a 1986 survey by the author on the west side of the Big Hole Battlefield, individuals were seen growing right next to the boundary fence within Park property; none were found outside the fence, in an area subject to livestock grazing and weed invasion. One population observed in 1989 (Briston Lane (025)), however, contained numerous individuals in an area that had been burned and grazed. This suggests that, in the short term, the plants can persist in areas so treated. Further studies are needed to determine the long-term effects of grazing on

P. lemhiensis.

An unusual phenomenon that illustrates the possible long-term sensitivity of P. lemhiensis to grazing was observed at the Badger Pass North (019) site in 1987. Numerous plants were found growing up through the branches of sagebrush shrubs, many of which were dead. This may have been a result of the moderate livestock grazing that has occurred in the area. The microhabitat under the shrubs appears open enough for seedling establishment, and the mature plants are then apparently protected from browsing once they grow into the shrub canopy. This phenomenon was not observed at any other location in Montana.

2. **Competition.**

   a. **Intraspecific:** The density of P. lemhiensis is low at virtually all known locations in Montana, and intraspecific competition is probably not an important factor in determining population size or structure.

   b. **Interspecific:** At the Big Hole National Battlefield (006), sampling of vegetation in areas with and without P. lemhiensis indicated that the occurrence of the species is correlated with vegetation density (Ramstetter, 1983). Penstemon lemhiensis was found growing most frequently in areas of lower vegetation cover, and rarely in areas of higher cover; this pattern of sensitivity to high vegetation density was not apparent for the other plant species associated with P. lemhiensis. In particular, areas of higher sagebrush and bunchgrass cover contained the fewest occurrences of P. lemhiensis. Additionally, it was theorized that P. lemhiensis occurs more often on steeper slopes at the Battlefield site, where natural soil slippage may be greater, because the sagebrush and bunchgrasses are not as dominant as they are on more gradual slopes.

      Further evidence for the apparently poor competitive ability of P. lemhiensis is provided by the observation that, in several populations, individuals have

colonized disturbed areas where vegetative cover is very low, i.e., roadbanks. In most of these cases, a few individuals have become established on roadcuts adjacent to steep slopes supporting undisturbed vegetation, but the majority of the plants occur in the native habitat. An exception was observed at the Big Hole National Battlefield (006), where the density of P. lemhiensis was much greater on the roadcut along the old highway than it was on the sagebrush slope above it (Ramstetter 1983). However, the majority of the plants were still found on the undisturbed slope above the road.

3. **Toxic and allelopathic interactions:** None known or observed.

D. **Hybridization.**

1. **Naturally occurring:** As discussed in I.5.C., it has been hypothesized that P. lemhiensis arose via hybridization between P. cyaneus and P. speciosus, followed by segregation and isolation (Keck 1940). Additional systematic studies are needed to evaluate this theory. No evidence of recent genetic interaction with other species of Penstemon has been observed during field studies in southwestern Montana.

2. **Artificially induced:** None known.

3. **Potential in cultivation:** Unknown.

E. **Other factors of population ecology:** The sparsely scattered distribution pattern of the populations, and their small average size, may have some influence on the pollination biology. Smaller populations that are more widely separated from the others may be visited less frequently by effective pollinators, thereby resulting in lower fruit and seed production. Field studies are needed to test this hypothesis.

9. **Current land ownership and management responsibility.**

A. **General nature of ownership (Montana):** United States Government, private.

B. **Specific landowners (Montana):**

1. U.S. Department of Agriculture, Forest Service
Beaverhead National Forest
610 N. Montana Street
Dillon, MT 59725

2. U.S. Department of Agriculture, Forest Service
Bitterroot National Forest
316 N. 3rd Street
Hamilton, MT 59840

3. U.S. Department of Interior
Bureau of Land Management
Dillon Resource Area
P.O. Box 1048
Dillon, MT 59725

4. U.S. Department of Interior
National Park Service
Big Hole National Battlefield
P.O. Box 237
Wisdom, MT 59761

5. Numerous individual private landowners.

C. **Management responsibility:** As outlined under specific landowners.

D. **Easements, conservation restrictions, etc.:** None known.

10. **Management practices and experience.**

A. **Habitat management.**

1. **Review of past management and land use experiences.**

a. **This taxon:** As discussed in I.8.C.1., the flowering stems of P. lemhiensis are vulnerable to browsing, probably by native ungulates and cattle. This undoubtedly reduces the amount of fruit and seed set. In time, this would result in declining population sizes if the mortality of established plants exceeded the rate of establishment of new individuals. A portion of the habitat in the Big Hole National Battlefield was burned by prescription, but the effects on P. lemhiensis have not yet been determined.

b. **Related taxa:** Unknown.

c. **Other ecologically similar taxa:** Not reviewed.

2. **Performance under changed conditions:** Although P. lemhiensis does have the ability to occupy disturbed habitats, the plants in these situations are not likely to represent long-term subpopulations. Road maintenance and weed control activities are likely to continually remove plants in these areas. The long-term effects of browsing are currently unknown.

3. **Current management policies and actions:** Penstemon lemhiensis is included on the U.S. Forest Service list of sensitive plant species in Region 1 (Reel et al. 1989). As such, it receives protection under U.S. Forest Service management policies. All of the federal agencies managing lands supporting populations are aware of the presence and locations of P. lemhiensis.

4. **Future land use:** Most of the habitats occupied by P. lemhiensis in Montana are used for livestock grazing, and this land use is expected to continue. Three sites containing large populations are in areas of past and potential future mining activity: French Creek (009), Quartz Hill Gulch (010), and Echo Gulch (011). At French Creek, numerous mines have been actively worked in the past, and renewed gold mining has recently been proposed (K. Scow, pers. comm.). At Echo Gulch, mining test pits were observed near the north subpopulation in 1986 (J.S. Shelly, pers. obs.).

B. **Cultivation.**

1. **Controlled propagation techniques:** None known; seed germination trials have been unsuccessful (see I.7.D.4.e.).

2. **Ease of transplanting:** Unknown.

3. **Pertinent horticultural knowledge:** Not reviewed.

4. **Status and location of presently cultivated material:** No cultivated material known.

11. Evidence of threats to survival.

A. Present or threatened destruction, modification, or curtailment of habitat or range.

1. Past threats: In certain portions of its range in Montana, the habitat of P. lemhiensis has been impacted by mining. In Beaverhead County, numerous mines have been established in the Rattlesnake Creek drainage in the southern Pioneer Mountains, including four in the French Creek drainage (Park, Yellow Band, Cross, and Discovery mines). These four mines are all within the known population boundaries of P. lemhiensis (009), and their establishment undoubtedly caused the extirpation of some individuals.

2. Existing threats: Renewed gold mining activity is occurring throughout western Montana, and the Yellow Band Mine has recently been considered for reactivation (K. Scow, pers. comm.). This mine is within the boundaries of the French Creek (009) site, which contains the largest number of plants of any of the Montana populations (1,845 individuals counted in 1988, representing approximately 40% of the plants documented in Montana).

Herbicides have been used in the French Creek drainage to control weedy plant species. Some of these applications have occurred within the habitat of P. lemhiensis (009) (J. Christensen, Beaverhead National Forest, pers. comm.).

3. Potential threats: Mining is expected to continue in southwestern Montana, and it is possible that additional populations of P. lemhiensis could be threatened by this land use. Use of herbicides is a serious potential threat, especially to populations along or near roadsides.

B. Overutilization for commercial, sporting, scientific, or educational purposes: No significant past or existing threats are known. Because the species is very showy, it could potentially be impacted through overcollecting by horticultural interests.

C. Disease, predation, or grazing.

1. Past threats: Portions of the range of P.

lemhiensis in Montana have been impacted by livestock grazing. As discussed in I.7.B.2., significant declines have been noted in three populations in the southern Pioneer Mountains. Of these, one occurs in an area of moderate to heavy livestock use (Ermont Gulch (014)). Seventy-six plants were counted there in 1986, but only one plant was found in 1989. Similar declines were noted at Badger Pass (005) and Red Butte (012); however, these sites did not appear to have been grazed recently, and there is an exclosure at the Badger Pass site that was constructed to prevent impacts from grazing. Thus, although grazing may have caused the decline at Ermont Gulch, the decreases there and in the two other populations may have been related to other factors (i.e., the severe drought conditions that prevailed in 1988). Browsing of flowering stems, by native ungulates and/or livestock, has also been observed in several populations (see I.8.C.1.).

2. **Existing threats:** Grazing use is ongoing throughout much of the species' range in southwestern Montana, and it is likely that impacts to some individuals are occurring as a result.

3. **Potential threats:** Browsing by native animals and livestock is likely to continue in the future. The monitoring transects established in 1989 (Shelly 1990b) will provide data that can be used to assess the resultant impacts on population demography.

D. **Inadequacy of existing regulatory mechanisms:** There are currently no state statutes that provide protection for rare or endangered plant species in Montana.

E. **Other natural or man-made factors:** Of the 35 known populations in Montana, 17 (49%) of them consist of fewer than 50 individuals, and 11 (31%) contain fewer than 20 individuals. These low population numbers may render the species vulnerable to extirpation in many parts of its range in the state. Also, these small populations, many of which are very isolated, may be less exposed to effective pollinators, especially the vespid wasp that appears to be specific to P. lemhiensis. Lastly, the observed declines in two populations, where no direct disturbance was observed, suggests that the

species may be vulnerable to dramatic climatic fluctuations such as the severe drought conditions that prevailed in 1988.

II. ASSESSMENT AND RECOMMENDATIONS

12. **General assessment of vigor, trends, and status:** Penstemon lemhiensis is a perennial plant species that is currently known from 35 sites in Beaverhead and Ravalli counties, Montana; it is also recently documented from 19 sites in Lemhi County, Idaho. In Montana, the average population size is small (approximately 128 individuals), and the total number of plants observed to date is approximately 4,420-4,525. While some populations appear to be relatively stable, drastic declines have been observed in three populations in Beaverhead County. Impacts due to browsing by native animals and livestock, and mining activities, have occurred in some populations; weed control via herbicide application also represents a current threat. The populations in Montana are very sparsely scattered over an area of approximately 3,500 square miles, and there is much suitable habitat that is apparently unoccupied. Although the species has colonized disturbed habitats in some places, the plants are never abundant in these situations, and this probably represents an ephemeral response to sites that mimic its native habitat. Owing to the low population numbers, the widely dispersed distribution pattern, and the observed declines in some areas, P. lemhiensis should continue to be closely monitored. Demographic monitoring transects established in 1989 will provide data that can be used to assess and predict population performance.

13. **Recommendations for listing or status change.**

A. **Recommendation to U.S. Fish and Wildlife Service:** On the basis of current information summarized herein, it is recommended that Penstemon lemhiensis be retained in Category 2. In Montana, the average population size is small, and the total number of documented individuals is low. Observed declines in several populations, and ongoing threats from mining and browsing, dictate that the species be closely monitored. Also, status surveys should be conducted in Idaho; a detailed status recommendation could be made upon completion of research in that portion of the species' range.

B. **Recommendations to other U.S. federal agencies:** Penstemon lemhiensis has been placed on the lists of sensitive species in Regions 1 and 4 of the U.S. Forest Service. These designations should be retained. In addition, P. lemhiensis should be

placed on a list of sensitive species occurring on U.S.D.I. Bureau of Land Management lands in Montana and Idaho, and appropriate District and Resource Area offices should be notified of its known or potential presence in their jurisdictions.

C. Other status recommendations.

1. Counties and local areas: No recommendations at this time.

2. States: Penstemon lemhiensis should be retained on the Natural Heritage Program lists in Montana and Idaho. In Montana, its status should remain S2 owing to the low total number of known individuals, the small size and widely scattered distribution of many populations, and the susceptibility of many sites to mining, browsing and herbicide use.

3. Other nations: Not currently pertinent.

4. International: Not currently pertinent.

14. Recommended critical habitat: Because the status of Penstemon lemhiensis needs to be more fully assessed in the Idaho portion of its range, critical habitat is not being recommended at this time.

15. Conservation/recovery recommendations.

A. General conservation recommendations.

1. Recommendations regarding present or anticipated activities: Penstemon lemhiensis has an ecological preference for more open microhabitats (i.e., rock outcrop areas and steep rocky slopes with some natural soil slippage). Surface alteration of small areas adjacent to the larger populations may mimic these sites, and in some cases plants have colonized disturbed areas. However, it should be strongly emphasized that most populations are small, and the total number of known individuals in Montana is only approximately 4,420-4,525. In addition, the species occupies a very small percentage of the apparently suitable habitat in southwestern Montana. Thus, the species is particularly vulnerable to extirpation should any large-scale habitat alteration (i.e., mining) be planned near or within any of the known populations. Though capable of occupying lightly disturbed areas,

it is doubtful that populations of P. lemhiensis could recover from such major alterations.

The response of P. lemhiensis to herbicide spraying is currently unknown. Though it is likely that established plants would be destroyed by such treatment, it is possible that the species may be fairly tolerant if populations in native habitats are left carefully untreated. The plants in these areas may then be able to serve as a seed source for recolonization of treated sites.

The sensitivity of the primary pollinators (Pseudomasaris vespoides, Osmia brevis) to management practices (i.e., herbicide or insecticide spraying) should also be carefully considered. Impacts on these insects, especially Pseudomasaris, may have a detrimental influence on seed production in Penstemon lemhiensis.

2. **Areas recommended for protection:** In Montana the largest known population, which accounts for approximately 40% of the known individuals in the state, is in the French Creek drainage (009). This site has been impacted by past mining activities, and portions of it are no longer in pristine condition. However, because it represents a large, viable population, management actions should provide for maintenance of the 13 subpopulations comprising the site.

   Other sites that appear to support viable populations of P. lemhiensis in predominantly native habitat include: Argenta (001), Lemhi Pass (003), Big Hole National Battlefield (006), Quartz Hill Gulch (010), Echo Gulch (012), Black Mountain Road (013), Roberts Gulch (015), Kearns Creek (018), and Badger Pass North (019).

3. **Management and recovery recommendations:** Additional research on the propagation of P. lemhiensis is needed, especially regarding seed germination requirements. This information would be useful in any future attempts to recover populations impacted by mining and other surface disturbances. Also, studies of the population at the Big Hole National Battlefield, in areas that were burned, would

be useful in assessing the response of the species to fire.

4. **Publicity sensitivity:** Low.

5. **Other recommendations:** None.

B. **Monitoring activities and research needs:** Three demographic monitoring transects were established in 1989: two in the French Creek population (009) and one at Badger Pass North (019) (Shelly 1990b). These transects are based on methods outlined by Lesica (1987). They should be reread annually for five years, and periodically thereafter at a frequency to be determined based on the initial results. Personnel from the MTNHP and the U.S. Forest Service should conduct these studies. In addition, periodic checks of other substantial populations, especially those in which declines have been noted, should be conducted.

Studies of pollination ecology, in both large and small populations, could reveal relative success rates in each situation. Comparisons of rates of pollinator visitation in geographically restricted and widespread species of Astragalus showed the latter to be visited significantly more often than the former (Karron 1987). Studies of small versus large, and isolated versus clustered, populations of P. lemhiensis may reveal significant pollination patterns within the range of the species.

16. **Interested parties:**

U.S. Fish and Wildlife Service
ATTN: Dr. James Miller
Office of Endangered Species
P.O. Box 25486
Denver Federal Center
Denver, CO 80225

U.S. Fish and Wildlife Service
ATTN: Mr. Scott Jackson
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Helena, MT 59626

U.S. Fish and Wildlife Service
ATTN: Dr. John Fay
Office of Endangered Species
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U.S. Forest Service, Region One
ATTN: Dr. Angela Evenden
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P.O. Box 7669
Missoula, MT 59807

U.S.D.I. Bureau of Land Management
Montana State Office
ATTN: Mr. Donald Heinze
P.O. Box 36800
Billings, MT 59107

The Nature Conservancy
ATTN: Dr. Larry Morse
1815 North Lynn Street
Arlington, VA 22209

The Nature Conservancy
ATTN: Dr. Joan Bird and Mr. Bernie Hall
Montana Field Office
P.O. Box 258
Helena, MT 59624

Montana Natural Heritage Program
State Library Building
1515 E. 6th Ave.
Helena, MT 59620

Idaho Natural Heritage Program
Department of Game and Fish
600 S. Walnut, Box 25
Boise, ID 83707

III. INFORMATION SOURCES

17. Sources of information.

A. Publications.

1. References cited in report: See Literature Cited (p. 49).

2. Other publications/sources:

Shelly, S. 1990. Profile: Montana's rare and endangered plants - Lemhi beardtongue. Kelseya (Newsletter of the Montana Native Plant Society) 3(2): 1.

B. Museum collections: Specimens from Montana were examined at MONTU, MONT, MRC, and RM.

Voucher specimens collected in Montana during field

work for this status report are cited in the COMMENTS field of the element occurrence print-outs (pp. 53-89), and are deposited at MONTU. Previously collected specimens from Montana are cited in the COMMENTS or BESTSOURCE fields of these print-outs.

C. Fieldwork.

1. Surveys conducted (Montana):

J.S. Shelly (MTNHP): 18-22 June 1986; 16-19 June 1987. Surveys in Beaverhead County; field notes, population surveys, photographs, and herbarium specimens.

J.S. Shelly (MTNHP) and A.M. Kratz (U.S. Forest Service): 26-29 June 1989. Surveys in Ravalli County; field notes, population surveys, photographs, and herbarium specimens.

L.A. Schassberger (MTNHP): 26-30 June 1989. Surveys in Beaverhead County; field notes, population monitoring and surveys, photographs, and herbarium specimens.

J.S. Shelly (MTNHP): 26-28 July 1989. Establishment of demographic monitoring transects, Beaverhead County.

D. Knowledgeable individuals:

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Helena, MT 59620

E. **Other information sources:** Additional information is on file at the Montana Natural Heritage Program office, Helena, Montana.

18. **Summary of materials on file:** All exact population locations are outlined on topographic maps on file at the Montana Natural Heritage Program. All field survey forms, field maps, and photographs from additional populations in Montana are also housed there. The MTNHP element file contains copies of most of the references cited herein, including Ramstetter (1983).

IV. AUTHORSHIP

19. **Initial authorship:**

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State Library Building
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20. **Maintenance of status report:** The respective Natural Heritage Programs (Montana and Idaho) will maintain current information, and update the status reports as needed. Should the species be listed by the U.S. Fish and Wildlife Service, the respective USFWS offices should maintain the primary information files, encourage others to provide new information, and distribute new findings to the interested parties.

V. NEW INFORMATION

21. **Record of revisions:** Not currently applicable.

Literature Cited

Alden, W.C. 1953. Physiography and glacial geology of western Montana and adjacent areas. Geological Survey Professional Paper 231. U.S. Government Printing Office, Washington, D.C. 200 pp., map.

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Appendix A (Element occurrence print-outs, **Montana**)

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.001

Survey site name: ARGENTA
EO rank: B
EO rank comments: LARGE POPULATION, OCCURS PARTIALLY ON DISTURBED ROADBANK.

County: BEAVERHEAD

USGS quadrangle: ERMONT

Township-range: 006S011W Section: 15
Township-range comments: SE4;22,NE4;23,NW4NW4

Survey date: 1986-06-20 Elevation: 6700
First observation: 1976 Slope/aspect:
Last observation: 1988 Size (acres): 10

Location:
S. PIONEER MOUNTAINS, N. SIDE OF BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. 2400), 0.2 MI. W. OF RATTLESNAKE CR. ROAD (N.F. RD. 192), CA. 4 AIR MI. WNW. OF ARGENTA.

Element occurrence data:
206 PLANTS COUNTED IN 1986 (204 ON PRIVATE INHOLDING, 2 ON U.S.F.S. LAND); 100 PLANTS COUNTED IN 1988 (K. SCOW); A FEW PLANTS OCCUR ON ROADBANKS; LOW LEVEL OF GRAZING; WEED INVASION ALONG THE ROAD.

General site description:
MODERATELY STEEP, SE. TO SW.- FACING SLOPES; MOST FREQUENT IN SPARSELY VEGETATED, ROCKY AREAS; ARTEMISIA TRIDENTATA/ FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, WITH BROMUS, SENECIO.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHERS-WATSON, T.J. (1277), 1976, MONTU (SEC. 23); SHELLY, J.S. (1140) & G.V. KING, 1986, MONTU; ELOFSON, S.N., MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.002

Survey site name: TRAIL CREEK
EO rank: D
EO rank comments: SMALL SUBPOPULATIONS ALONG ROAD.

County: BEAVERHEAD

USGS quadrangle: EVERSON CREEK
LEMHI PASS

Township-range: 010S014W Section: 18
Township-range comments: S2,17SW4,19NW4;T10SR15W:24NE4

Survey date:	1986-06-22	Elevation:	6520
First observation:	1970	Slope/aspect:	
Last observation:	1989-06-29	Size (acres):	13

Location:
TRAIL CREEK, ALONG ROAD TO LEMHI PASS (BEAVERHEAD N.F. RD. 3909.2), CA. 3.5-4.5 AIR MI. ESE. OF LEMHI PASS.

Element occurrence data:
70-100 PLANTS, 6 SUBPOPULATIONS; IN FULL FLOWER; MOST PLANTS OCCUR ALONG ROADSIDE.

General site description:
SANDY TO GRAVELLY LOAM SOILS, ON ALLUVIAL FAN AND ALONG ROAD; ARTEMISIA TRIDENTATA/POA SECUNDA, WITH BROMUS TECTORUM, SITANION HYSTRIX, CHRYSOTHAMNUS NAUSEOSUS AND ERIOGONUM OVALIFOLIUM VAR NEVADENSE.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHERS-WATSON, T.J. (1279), 1976, MONTU; STICKNEY, P.F. (2107), 1970, MONT; SCHASSBERGER, L.A. (299), 1989.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE; SCHASSBERGER, L.A. 1989. FIELD SURVEY OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.003

Survey site name: LEMHI PASS
EO rank: C
EO rank comments: MODERATE-SIZED POPULATIONS, IN NATIVE HABITAT & ALONG ROAD.

County: BEAVERHEAD

USGS quadrangle: LEMHI PASS

Township-range: 010S015W Section: 15
Township-range comments: SE4NW4,NE4SE4,14SW4

Survey date: 1986-06-22 Elevation: 6960
First observation: 1983 Slope/aspect:
Last observation: 1989-06-29 Size (acres): 15

Location:
NORTH SIDE OF LEMHI PASS ROAD (BEAVERHEAD N.F. RD. 3909.2), 1.0-1.6 AIR MILES SE. OF LEMHI PASS, CA. 1.4-2.0 MILES WEST OF SELWAY RANCH.

Element occurrence data:
164 PLANTS COUNTED, 3 SUBPOPULATIONS; CA. 90% OF THE PLANTS OCCUR ON NATIVE SAGEBRUSH SLOPES ABOVE THE ROAD; SPECIES OCCURS IN MORE OPEN, GRAVELLY AREAS.

General site description:
GRAVELLY LOAM SOILS, ON SW. TO SE.-FACING SLOPES; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH PHACELIA HETEROPHYLLA, BROMUS TECTORUM, LUPINUS, PHLOX, POA, ACHILLEA, ROSA, MAHONIA REPENS, GERANIUM VISCOSISSIMUM, HELIANTHELLA UNIFLORA, ERIOGONUM UMBELLATUM VAR INTECTUM AND VAR SUBALPINUM.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER-SHELLY, J.S. (1155) AND G.V. KING, 1986, MONTU; SCHASSBERGER, L.A. (302), 1989.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEYS OF SOUTHWEST MONTANA, 26-30 JUNE (PENSTEMON LEMHIENSIS).

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.004

Survey site name: NORTH FORK RYE CREEK
EO rank: C
EO rank comments: FAIRLY SMALL POPULATION, IN WEEDY HABITAT.

County: RAVALLI

USGS quadrangle: ROBBINS GULCH

Township-range: 003N020W Section: 25
Township-range comments: NW4SW4,SW4NW4

Survey date: 1989-06-26 Elevation: 4320
First observation: 1952 Slope/aspect: 35% / WEST
Last observation: 1989-06-26 Size (acres): 3

Location:
WESTERN FOOTHILLS OF THE SAPPHIRE MOUNTAINS, NORTH FORK RYE CREEK DRAINAGE, EAST SIDE OF BITTERROOT N.F. RD. #321, 0.2 AND 0.35 MILES NORTH OF RYE CREEK RD. (#75), CA. 7.5 AIR MILES ESE OF DARBY.

Element occurrence data:
TWO SUBPOPULATIONS; 72 PLANTS (SOUTH), WITH 65 ON SLOPE ABOVE ROADCUT; 11 PLANTS (NORTH), ALL ON ROADCUT; HABITAT HEAVILY INFESTED WITH WEEDS; LARGEST POPULATION KNOWN IN RAVALLI COUNTY.

General site description:
SANDY TO GRAVELLY GRANITIC SOILS, ON STEEP WEST-FACING SLOPES; PINUS PONDEROSA/PURSHIA TRIDENTATA HABITAT, WITH AGROPYRON SPICATUM, KOELERIA CRISTATA, PENSTEMON ALBERTINUS, BALSAMORHIZA SAGITTATA, PHACELIA LINEARIS, GERANIUM VISCOSISSIMUM, CENTAUREA MACULOSA, BROMUS TECTORUM, LITHOSPERMUM RUDERALE, MELILOTUS OFFICINALIS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER - SHELLY, J.S. (1565) AND A. KRATZ, 1989; PROBABLE RELOCATION OF HISTORICAL RECORD: WRIGHT, J.C. (S.N.), 1952, MONT: "10 MILES E. OF DARBY, SAPPHIRE MTS. FOOTHILLS, SANDY GRANITIC SOIL, PONDEROSA PINE ZONE."

Information source:
SHELLY, J.S. 1989. FIELD SURVEYS IN RAVALLI COUNTY, 26-29 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.005

Survey site name: BADGER PASS
EO rank: B
EO rank comments: LARGE POPULATION, MOSTLY NATIVE HABITAT, FENCE EXCLOSURE.

County: BEAVERHEAD

USGS quadrangle: BANNACK

Township-range: 007S011W Section: 22
Township-range comments: N2NW4

Survey date: 1986-06-20 Elevation: 7260
First observation: 1972 Slope/aspect:
Last observation: 1989-06-14 Size (acres): 10

Location:
1.45 AIR MILES SSE. OF BADGER PASS, ADJACENT TO MICROWAVE TOWER ON GRAVEL ROAD 1.3 AIR MI. S. OF BIG HOLE ROAD (ST. HWY. 278), CA. 4.5 AIR MI. NNE. OF BANNACK.

Element occurrence data:
1986: 190 PLANTS COUNTED; CA. 75 PLANTS ARE WITHIN A FENCE EXCLOSURE, WHICH WAS CONSTRUCTED TO PROTECT PART OF THE POPULATION. 1989: VERY FEW PLANTS OBSERVED, AND NONE FOUND INSIDE EXCLOSURE.

General site description:
GRAVELLY LOAM SOILS, E. TO NE. ASPECT; ARTEMISIA TRIDENTATA/ PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, LUPINUS LEUCOPHYLLUS, ANTENNARIA MICROPHYLLA, GEUM, SEDUM.

Land owner/manager:
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
VOUCHERS-SHELLY, J.S. (1147) AND G.V. KING, 1986, MONTU; KOVALCHICK, B.L., 1972, MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.006

Survey site name: BIG HOLE NATIONAL BATTLEFIELD
EO rank: B
EO rank comments: LARGE POPULATION; PORTION OF HABITAT RECENTLY BURNED.

County: BEAVERHEAD

USGS quadrangle: BIG HOLE BATTLEFIELD

Township-range: 002S017W Section: 24
Township-range comments: W2SE4,13SW4,23SE4

Survey date: 1983-07-26 Elevation: 6320
First observation: 1976 Slope/aspect:
Last observation: 1986-07-08 Size (acres): 50

Location:
BIG HOLE NATIONAL BATTLEFIELD, 9 MILES WEST OF WISDOM ON ST. HWY. 43.

Element occurrence data:
THREE SUBPOPULATIONS, WITH 447 PLANTS (S. OF "SIEGE AREA" & ROADCUT ALONG SLOPE), "HUNDREDS" (N. OF "SIEGE AREA"), AND CA. 40 BELOW VISITOR'S CENTER; NO PLANTS FOUND OUTSIDE BATTLEFIELD BOUNDARIES.

General site description:
SAGEBRUSH STEPPE PORTION OF SE. FACE OF BATTLE MTN., AND ON NW.-FACING BENCHLAND BELOW VISITOR'S CENTER; ARTEMISIA TRIDENTATA/AGROPYRON SPICATUM/FESTUCA IDAHOENSIS.

Land owner/manager:
BIG HOLE NATIONAL BATTLEFIELD

Comments:
VOUCHERS: HITCHCOCK (19189),NO DATE, WTU; WATSON,T.J.(1271), 1976, MONTU (093357); PIERCE,J. (798), 1980, MONTU (86884).

Information source:
PIERCE, JOHN. 737 LOCUST STREET, MISSOULA, MT 59802.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.007

Survey site name: MEDICINE TREE CREEK
EO rank: D
EO rank comments: VERY SMALL POPULATION, MOSTLY ON ROADSIDE, WEEDY AREA.

County: RAVALLI

USGS quadrangle: ROBBINS GULCH

Township-range: 002N020W Section: 21
Township-range comments: NE4SE4,SW4NE4

Survey date: 1989-06-29 Elevation: 4150
First observation: 1950 Slope/aspect: 8-35% / S,SW
Last observation: 1989-06-29 Size (acres): 2

Location:
EAST FORK BITTERROOT RIVER DRAINAGE, NORTH SIDE OF U.S. HWY. 93, 0.1 MI. WEST OF MEDICINE TREE CREEK, AND 0.3 AIR MI. NORTHWEST OF HWY. BRIDGE OVER CREEK, CA. 2.5 MILES SOUTHEAST OF CONNER.

Element occurrence data:
10 PLANTS OBSERVED, 7 ON ROADCUT, 3 ON SLOPES ABOVE.

General site description:
GRANITIC, GRAVELLY TO SANDY LOAM SOILS, ON ROADCUT AND WEEDY SLOPES; PINUS PONDEROSA/PURSHIA TRIDENTATA HABITAT, WITH CENTAUREA MACULOSA, BROMUS TECTORUM, KOELERIA CRISTATA, BALSAMORHIZA SAGITTATA, PHACELIA LINEARIS, P. HETEROPHYLLA, PHYSARIA GEYERI, ALYSSUM ALYSSOIDES, AGROPYRON SPICATUM, VERBASCUM THAPSUS, ARABIS HOLBOELLII.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER - SHELLY, J.S. (1568) AND A. KRATZ, 1989; POSSIBLE RELOCATION OF HISTORICAL RECORD: MCCALL, T.G. & V.C. (352), 1950, MONTU (49394): "BETWEEN CONNER AND SULA, ON ROCKY HILLSIDE ABOVE RIVER."

Information source:
SHELLY, J.S. 1989. FIELD SURVEYS IN RAVALLI COUNTY, 26-29 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.008

Survey site name: JOHNSON GULCH
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: DEER CANYON

Township-range: 011S011W Section: 18
Township-range comments: SE4

Survey date: 1984-07-06 Elevation: 6500
First observation: 1984 Slope/aspect:
Last observation: 1984-07-06 Size (acres): 0

Location:
NORTH SIDE OF JOHNSON GULCH, ALONG THE ROAD CA. 10 MI. SE. OF GRANT.

Element occurrence data:
ONE PLANT (SPECIMEN IS ONE TOPSNATCHED STEM).

General site description:
SILTY SOIL OF A BENCH; WITH ARTEMISIA TRIDENTATA AND AGROPYRON SPICATUM.

Land owner/manager:
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
VOUCHER-LESICA, P. (3110), 1984, MONTU (06215).

Information source:
LESICA, P. DIVISION OF BIOLOGICAL SCIENCES, UNIV. OF MONTANA, MISSOULA, MT.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.009

Survey site name: FRENCH CREEK
EO rank: B
EO rank comments: LARGE POPULATION; NATIVE HABITAT, BUT NEAR ROAD AND MINES.

County: BEAVERHEAD

USGS quadrangle: ERMONT

Township-range: 006S011W Section: 11
Township-range comments: E2,14NE4NW4,2SE4SE4,1W2SW4

Survey date: 1986-06-19 Elevation: 7000
First observation: 1986 Slope/aspect:
Last observation: 1989-07-27 Size (acres): 40

Location:
PIONEER MOUNTAINS, SLOPES ALONG WEST SIDE OF FRENCH CREEK, ALONG THE FRENCH CREEK-THIEF CREEK ROAD (BEAVERHEAD N.F. RD. #606) 4 AIR MILES NW. OF ARGENTA; ALSO, MOUTH OF RED GULCH.

Element occurrence data:
138 PLANTS COUNTED (CA. 150 TOTAL) IN MAIN POPULATION, WITH 22 PLANTS COUNTED IN SUBPOPULATION AT THE MOUTH OF RED GULCH (1986); 1845 PLANTS, IN 13 SUBPOPULATIONS, COUNTED IN 1988 (K. SCOW); AREA SUBJECT TO MINING DISTURBANCE; TWO MONITORING TRANSECTS ESTABLISHED IN 1989.

General site description:
STEEP, E. & SE.-FACING SLOPES, IN GRAVELLY LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, WITH JUNIPERUS SCOPULORUM, PSEUDOTSUGA MENZIESII, ARTEMISIA FRIGIDA.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1130) AND G.V. KING, 1986, MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.010

Survey site name: QUARTZ HILL GULCH
EO rank: B
EO rank comments: GOOD POPULATION, MOSTLY IN NATIVE HABITAT; SOME ALONG ROAD.

County: BEAVERHEAD

USGS quadrangle: VIPOND PARK

Township-range: 001S011W Section: 26
Township-range comments: E2SE4

Survey date: 1986-07-08 Elevation: 8000
First observation: 1986 Slope/aspect:
Last observation: 1986-07-08 Size (acres): 15

Location:
HEAD OF QUARTZ HILL GULCH, ALONG BEAVERHEAD N.F. RD. 187; 0.7 AIR MILES ENE. OF GRAY JOCKEY PEAK, CA. 5 AIR MI. SSE. OF WISE RIVER, PIONEER MOUNTAINS.

Element occurrence data:
203 PLANTS COUNTED, IN FLOWER; NEARBY AREAS SUBJECT TO MINING DISTURBANCE.

General site description:
EAST-FACING SLOPE, ON CLAY LOAM SOILS; OPENINGS IN PINUS CONTORTA/PSEUDOTSUGA MENZIESII FOREST, WITH JUNIPERUS COMMUNIS, TOWNSENDIA PARRYI, PEDICULARIS CONTORTA.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, WISE RIVER RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1192), 1986, MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 8-9 JULY.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.011

Survey site name: ECHO GULCH
EO rank: AB
EO rank comments: LARGE POPULATION, MOSTLY IN UNDISTURBED HABITAT.

County: BEAVERHEAD

USGS quadrangle: VIPOND PARK

Township-range: 001S011W Section: 36
Township-range comments: W2,35E2SE4

Survey date:	1986-07-08	Elevation:	8100
First observation:	1986	Slope/aspect:	
Last observation:	1986-07-08	Size (acres):	45

Location:
NEAR HEAD OF ECHO GULCH, SLOPES 0-0.5 AIR MI. N. OF VIPOND PARK, ALONG BEAVERHEAD N.F. RD. 187; 0.5-0.75 AIR MI. W. AND SW. OF QUARTZ HILL, PIONEER MOUNTAINS.

Element occurrence data:
252 PLANTS COUNTED IN SOUTH SUBPOPULATION, 100-150 PLANTS IN NORTH SUBPOPULATION; IN FLOWER; MINING TEST PITS OBSERVED NEAR NORTH SUBPOPULATION.

General site description:
SOUTH AND EAST-FACING SLOPES, ON GRAVELLY SILT LOAM SOILS; PINUS CONTORTA/GRASSLAND, WITH PEDICULARIS CONTORTA, TOWNSENDIA PARRYI, ANTENNARIA MICROPHYLLA, FESTUCA IDAHOENSIS.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, WISE RIVER RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1199), 1986, MONTU; AREA NEEDS ADDITIONAL SURVEY.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 8-9 JULY.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.012

Survey site name: RED BUTTE
EO rank: B
EO rank comments: MODERATE-SIZED POPULATION; HABITAT IN GOOD CONDITION.

County: BEAVERHEAD

USGS quadrangle: ERMONT

Township-range: 006S011W Section: 15
Township-range comments: NE4,10S2

Survey date: 1986-06-19 Elevation: 6800
First observation: 1986 Slope/aspect:
Last observation: 1989-07-27 Size (acres): 20

Location:
CA. 4.5 AIR MI. NW. OF ARGENTA, CENTERED 0.5 AIR MI. ESE. OF RED BUTTE, RATTLESNAKE CREEK DRAINAGE CA. 1 MI. SE. OF KELLY RESERVOIR, PIONEER MOUNTAINS.

Element occurrence data:
142 PLANTS COUNTED IN MAIN SUBPOPULATION (CENTRUM), 169 TOTAL, 3 SUBPOPULATIONS (1986); NO PLANTS OBSERVED IN MAIN SUBPOPULATION IN 1988 (K. SCOW), AND ONLY CA. 12 IN 1989 (SHELLY); MAIN POPULATION NEAR, BUT NOT RIGHT ALONG, A LIGHTLY-USED GRAVEL ROAD.

General site description:
S. AND SW.-FACING SLOPES, LOAMY SOILS; ARTEMISIA TRIDENTATA/ FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, WITH SENECIO CANUS, PHACELIA LINEARIS, KOELERIA MACRANTHA, PSME.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1133) AND G.V. KING, 1986, MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.013

Survey site name: BLACK MOUNTAIN ROAD
EO rank: C
EO rank comments: SMALLER POPULATION, MANY PLANTS ON ROADSIDE.

County: BEAVERHEAD

USGS quadrangle: ERMONT

Township-range: 006S011W Section: 21
Township-range comments: W2SE4NE4,20SE4SE4

Survey date:	1986-06-20	Elevation:	7200
First observation:	1986	Slope/aspect:	
Last observation:	1986-06-20	Size (acres):	20

Location:
CA. 5 AIR MI WNW. OF ARGENTA, ALONG BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. #2400) CA. 3 AIR MI. SSE. OF BLACK MOUNTAIN, PIONEER MOUNTAINS.

Element occurrence data:
CA. 100-125 PLANTS TOTAL, MAINLY IN TWO SUBPOPULATIONS AND SCATTERED ALONG ROADSIDE; IN FLOWER.

General site description:
EAST AND SE.-FACING SLOPES, RED-COLORED LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH PHACELIA LINEARIS, ERIOGONUM, ASTER, BERBERIS.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1142) AND G.V. KING, 1986, MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.014

Survey site name: ERMONT GULCH
EO rank: C
EO rank comments: SMALL POPULATION, NATIVE HABITAT IMPACTED BY GRAZING.

County: BEAVERHEAD

USGS quadrangle: ERMONT

Township-range: 006S011W Section: 33
Township-range comments: NE4SE4,34W2

Survey date: 1986-06-20 Elevation: 6740
First observation: 1986 Slope/aspect:
Last observation: 1989-07-27 Size (acres): 5

Location:
CA 4.3 AIR MI. WSW. OF ARGENTA, ALONG BEAVERHEAD N.F. RD. #7467 AT HEAD OF ERMONT GULCH, CA. 2.2 AIR MI. N. OF BADGER PASS, PIONEER MOUNTAINS.

Element occurrence data:
76 PLANTS COUNTED (1986); ONLY ONE PLANT SEEN IN 1989; AREA SUBJECT TO MODERATE TO HEAVY GRAZING.

General site description:
SE.-FACING SLOPE, LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, ANTENNARIA MICROPHYLLA, KOELERIA MACRANTHA, COMANDRA UMBELLATA, ERIOGONUM.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1146) AND G.V. KING, 1986, MONTU

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.015

Survey site name: ROBERTS GULCH
EO rank: B
EO rank comments: SMALL POPULATION, NATIVE HABITAT IN GOOD CONDITION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township-range: 009S014W Section: 33
Township-range comments: N2SE4

Survey date: 1986-06-22 Elevation: 6520
First observation: 1986 Slope/aspect:
Last observation: 1986-06-22 Size (acres): 5

Location:
MOUTH OF ROBERTS GULCH, CA. 1 AIR MI. NW. OF BLOODY DICK CREEK, CA. 12.5 AIR MI. WEST OF GRANT AND 6.5 AIR MI. ENE. OF LEMHI PASS.

Element occurrence data:
54 PLANTS COUNTED; IN FLOWER; HABITAT RELATIVELY UNDISTURBED, SOME GRAZING USE.

General site description:
EAST-FACING SLOPE ALONG SMALL DRAINAGE, LOAM SOILS; ARTEMISIA TRIDENTATA/AGROPYRON SPICATUM, CHRYSOTHAMNUS VISCIDIFLORUS, ARTEMISIA FRIGIDA, LUPINUS, ANTENNARIA.

Land owner/manager:
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
VOUCHER- SHELLY, J.S. (1156) AND G.V. KING, 1986, MONTU.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.016

Survey site name: TRAPPER CREEK
EO rank: D
EO rank comments: SMALL, VULNERABLE ROADSIDE POPULATION.

County: BEAVERHEAD

USGS quadrangle: CATTLE GULCH

Township-range: 002S010W Section: 20
Township-range comments: W2SE4

Survey date: 1987-06-16 Elevation: 6800
First observation: 1987 Slope/aspect:
Last observation: 1987-06-16 Size (acres): 1

Location:
PIONEER MOUNTAINS, TRAPPER CREEK DRAINAGE, ALONG BEAVERHEAD N.F. RD. #188; ABOUT 10 MILES WEST OF MELROSE; ABOUT 1 AIR MILE SSE. OF ORE CAMP HILL.

Element occurrence data:
18 PLANTS COUNTED; FLOWERING; POPULATION OCCURS RIGHT ALONG ROADSIDE.

General site description:
GRAVELLY LOAM SOILS, ON ROADSIDE; ARTEMISIA TRIDENTATA/ AGROPYRON SPICATUM/FESTUCA IDAHOENSIS, GERANIUM VISCOSISSIMUM, ERIOGONUM UMBELLATUM.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, WISE RIVER RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1335), 1987, MONTU.

Information source:
SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.017

Survey site name: BROWNES LAKE
EO rank: D
EO rank comments: SMALL POPULATION; PARTIALLY ALONG ROADSIDE.

County: BEAVERHEAD

USGS quadrangle: STORM PEAK

Township-range: 003S010W Section: 34
Township-range comments: S2SW4

Survey date: 1987-06-17 Elevation: 6650
First observation: 1987 Slope/aspect:
Last observation: 1987-06-17 Size (acres): 1

Location:
PIONEER MOUNTAINS, ROCK CREEK DRAINAGE, ALONG ROCK CREEK ROAD ABOUT 6 MILES WEST OF I-15, NEAR WEST END OF BROWNES LAKE.

Element occurrence data:
ONLY 4 PLANTS SEEN, 2 ON ROADSIDE AND 2 ON NATURAL SLOPE ABOVE ROAD.

General site description:
GRAVELLY LOAM SOILS, ON ROADSIDE AND SLOPE ABOVE ROAD; PSEUDOTSUGA MENZIESII/AGROPYRON SPICATUM, WITH CERCOCARPUS MONTANUS, SENECIO CANUS, PENSTEMON ARIDUS.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER-SHELLY, J.S. (1339), 1987, MONTU.

Information source:
SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.018

Survey site name: KEARNS CREEK
EO rank: C
EO rank comments: SMALLER POPULATION; SOME MINING AND GRAZING NEARBY.

County: BEAVERHEAD

USGS quadrangle: ERMONT

Township-range: 006S011W Section: 16
Township-range comments: NE4,15N2SW4,S2NW4

Survey date: 1987-06-17 Elevation: 6900
First observation: 1987 Slope/aspect:
Last observation: 1988 Size (acres): 5

Location:
PIONEER MOUNTAINS, KEARNS CREEK, ADJACENT TO SILVER RULE MINE; ABOUT 0.5 AIR MILE SOUTHWEST OF RED BUTTE; ABOUT 0.75 AIR MILE WEST OF RATTLESNAKE CREEK.

Element occurrence data:
52 PLANTS COUNTED, 4 SUBPOPULATIONS (1987); MOST ABUNDANT ON EAST-FACING SLOPE ALONG CREEK, ON GRAVELLY OPEN SLOPE; SOME GRAZING AND MINING ACTIVITY IN THE AREA; FIFTH SUBPOPULATION, CONTAINING 40 PLANTS, LOCATED IN 1988 BY K. SCOW.

General site description:
GRAVELLY LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH SENECIO CANUS, BALSAMORHIZA SAGITTATA, HELIANTHELLA QUINQUENERVIS, LUPINUS SERICEUS, PSEUDOTSUGA MENZIESII, PINUS CONTORTA.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER-SHELLY, J.S. (1342), 1987, MONTU.

Information source:
SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.019

Survey site name: BADGER PASS NORTH
EO rank: B
EO rank comments: MODERATE-SIZED POPULATION; FAIR TO GOOD CONDITION RANGELAND.

County: BEAVERHEAD

USGS quadrangle: BANNACK

Township-range: 007S011W Section: 09
Township-range comments: NE4NE4,10NW4,3SW4

Survey date: 1987-06-18 Elevation: 6980
First observation: 1987 Slope/aspect:
Last observation: 1989-07-28 Size (acres): 4

Location:
SOUTHERN PIONEER MOUNTAINS, 0.7-1.2 AIR MILES NNE. OF BADGER PASS; ABOUT 15 AIR MILES WEST OF DILLON.

Element occurrence data:
ABOUT 200 PLANTS COUNTED, POPULATION = EST. 300+ PLANTS, 3 SUBPOPULATIONS OBSERVED; FLOWERING; NUMEROUS PLANTS GROWING THROUGH BRANCHES OF SAGEBRUSH SHRUBS; AREA IS LIGHTLY TO MODERATELY GRAZED; PERMANENT MONITORING TRANSECT ESTABLISHED IN 1989.

General site description:
BROWN LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH PSEUDOTSUGA MENZIESII, BALSAMORHIZA SAGITTATA, LUPINUS SERICEUS, ANTENNARIA MICROPHYLLA, ASTER STENOMERES.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1343), 1987, MONTU.

Information source:
SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.020

Survey site name: SELWAY CREEK
EO rank: D
EO rank comments: VERY SMALL POPULATION; NATIVE HABITAT, SOME GRAZING IMPACTS.

County: BEAVERHEAD

USGS quadrangle: KITTY CREEK

Township-range: 008S015W Section: 27
Township-range comments: SW4NE4

Survey date: 1989-06-29 Elevation: 7200
First observation: 1987 Slope/aspect: 20-30% / EAST
Last observation: 1989-06-29 Size (acres): 1

Location:
BLOODY DICK CREEK DRAINAGE, SLOPES ABOVE SELWAY CREEK, ABOUT 2 MILES SOUTHEAST OF RESERVOIR LAKE; ABOUT 4 MILES EAST OF MONTANA-IDAHO STATE LINE.

Element occurrence data:
SIX PLANTS OBSERVED, IN 2 CLUMPS (19 JUNE 1987); FLOWERING; PLANTS ASSOCIATED WITH STEEP ROCK OUTCROP AREAS, AND NOT OBSERVED IN DENSER SURROUNDING VEGETATION. 10 PLANTS OBSERVED IN 1989.

General site description:
ROCK OUTCROPS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH ERIOGONUM UMBELLATUM, PHACELIA FRANKLINII, SEDUM LANCEOLATUM, LUPINUS SERICEUS, PSEUDOTSUGA MENZIESII, PICO.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT

Comments:
VOUCHER-SHELLY, J.S. (1344), 1987, MONTU. SHELLY, J.S. 1987. FIELD SURVEYS OF BEAVERHEAD COUNTY OF 16-19 JUNE.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEYS OF SOUTHWEST MONTANA 26-30 JUNE (Penstemon lemhiensis).

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.021

Survey site name: WEST OF BIG HOLE BATTLEFIELD
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: UNMAPPABLE

Township-range: Section:
Township-range comments:

Survey date:	1947-07-23	Elevation:	5000
First observation:	1947	Slope/aspect:	
Last observation:	1947-07-23	Size (acres):	0

Location:
WEST OF BIG HOLE BATTLEFIELD (HISTORICAL COLLECTION).

Element occurrence data:
UNKNOWN; MAY POSSIBLY HAVE BEEN FROM JUST OUTSIDE WESTERN BOUNDARY OF BIG HOLE BATTLEFIELD, IN AREA THAT IS NOW DISTURBED BY GRAZING (1986); ELEVATION GIVEN IS LOWER THAN PRESENT IN AREA.

General site description:
SAGEBRUSH AREA.

Land owner/manager:

Comments:
SPECIMEN DETERMINED BY D. KECK; FIRST MONTANA RECORD.

Information source:
ROSE, FRANK H. (3502). 1947. SPECIMEN #092520 UM.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.022

Survey site name: MEDICINE LODGE CREEK
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: TEPEE MOUNTAIN

Township-range: 013S012W Section: 03
Township-range comments: SE4NE4,NE4SE4

Survey date:	1987- -	Elevation:	6970
First observation:	1987	Slope/aspect:	
Last observation:	1987- -	Size (acres):	20

Location:
MEDICINE LODGE CREEK DRAINAGE, 0.15 AIR MILES WNW OF CONFLUENCE OF MEDICINE LODGE AND HILDRETH CREEKS, CA. 19 AIR MILES SOUTH OF GRANT.

Element occurrence data:
UNKNOWN; POPULATION REPORTED TO BE LARGE BY J. CHRISTENSEN.

General site description:
UNKNOWN; SPECIES OFTEN OCCURS IN SAGEBRUSH/BUNCHGRASS HABITATS AT HIGHER ELEVATIONS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
SITE REPORTED BY J. CHRISTENSEN, BEAVERHEAD NATIONAL FOREST; STATUS UNCERTAIN - DURING SURVEYS IN 1989, THIS SITE WAS INACCESSIBLE OWING TO PRESENCE OF POSTED PRIVATE LAND (L. SCHASSBERGER).

Information source:
CHRISTENSEN, JIM. BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT, 610 N. MONTANA ST., DILLON, MT 59725.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.023

Survey site name: MINER CREEK
EO rank: C
EO rank comments: HEAVILY GRAZED, INVASIVE WEEDS.

County: BEAVERHEAD

USGS quadrangle: MINER LAKE

Township-range: 006S016W Section: 02
Township-range comments: SE4

Survey date: 1989-06-30 Elevation: 7080
First observation: 1989 Slope/aspect: 3-15% / ESE
Last observation: 1989-06-30 Size (acres): 10

Location:
BIGHOLE VALLEY, CA. 6 MILES SOUTHWEST OF JACKSON, NORTH OF F.S. ROAD 182.

Element occurrence data:
UNCOMMON, 17 PLANTS IN 1989.

General site description:
SAGEBRUSH GRASSLAND WITH SPERGULA ARVENSIS, ERIOGONUM UMBELLATUM, CAREX FILIFOLIA, LUPINUS SERICEUS.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, WISDOM RANGER DISTRICT

Comments:
VOUCHER - SCHASSBERGER, L.S. (311), 1989, (MONTU).

Information source:
SCHASSBERGER, L.S. 1989. FIELD SURVEYS IN SOUTHWEST MONTANA OF 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.024

Survey site name: FROG CREEK
EO rank: C
EO rank comments: SMALL POPULATION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township-range: 009S014W Section: 21
Township-range comments: SW4

Survey date: 1989-06-29 Elevation: 7280
First observation: 1989 Slope/aspect: 8-15% / EAST
Last observation: 1989-06-29 Size (acres): 1

Location:
HORSE PRAIRIE, CA. 1 MILE NORTHWEST OF HORSE PRAIRIE GUARD STATION.

Element occurrence data:
26 PLANTS IN 1989.

General site description:
ON ROADSIDE EMBANKMENT WITH BALSAMORHIZA SAGITTATA, ARTEMISIA TRIDENTATA, CASTILLEJA PALLESCENS, FESTUCA IDAHOENSIS AND FRAGARIA VESCA.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
POPULATION COULD BE ELIMINATED THROUGH ROAD MAINTENANCE.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEYS OF SOUTHWEST MONTANA, 26-30 JUNE (PENSTEMON LEMHIENSIS).

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.025

Survey site name: BRISTON LANE
EO rank: A
EO rank comments: LARGE POPULATION.

County: BEAVERHEAD

USGS quadrangle: HIGHLAND RANCH

Township-range: 003S016W Section: 35
Township-range comments: NE4,S2

Survey date: 1989-06-30 Elevation: 6260
First observation: 1989 Slope/aspect: 8-15% / EAST
Last observation: 1989-06-30 Size (acres): 10

Location:
CA. 5.5 MILES SSW OF WISDOM. CA. 3.5 MILES ALONG BRISTON LANE, JUST WEST OF THE ROAD.

Element occurrence data:
110 PLANTS IN 1989.

General site description:
SITE WAS BURNED (SAGEBRUSH GONE) AND IS GRAZED. ASSOCIATED SPECIES INCLUDE AGROPYRON SPICATUM, STIPA COMATA, ERIOGONUM UMBELLATUM VAR SUBALPINUM, SEDUM LANCEOLATUM, GERANIUM VISCOSISSIMUM AND SPERGULA ARVENSIS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
BURNING AND GRAZING APPEARS TO HAVE IMPROVED THE HABITAT FOR P. LEMHIENSIS.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEYS OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.026

Survey site name: SWAMP CREEK
EO rank: D
EO rank comments: AROUND CATTLE SALT LICK.

County: BEAVERHEAD

USGS quadrangle: HIGHLAND RANCH

Township-range: 003S016W Section: 04
Township-range comments: E2

Survey date:	1989-06-30	Elevation:	6260
First observation:	1989	Slope/aspect:	0-3% / SE
Last observation:	1989-06-30	Size (acres):	3

Location:
BIGHOLE VALLEY, CA. 5.2 MILES WEST OF WISDOM, ALONG SWAMP CREEK RD., SOUTH OF ROAD.

Element occurrence data:
23 PLANTS IN 1989.

General site description:
IN OPEN ROCKY GROUND, WITH ARTEMISIA TRIDENTATA, SEDUM LANCEOLATUM, ASTRAGALUS MISER, TARAXACUM OFFICINALE, STIPA COMATA AND POA SECUNDA.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
CATTLE DISTURBANCE AROUND SALT LICK APPEARS TO HAVE ENHANCED HABITAT FOR THIS SPECIES.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEYS IN SOUTHWESTERN MONTANA OF 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.027

Survey site name: HORSE PRAIRIE GUARD STATION
EO rank: D
EO rank comments: VERY SMALL POPULATION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township-range: 009S014W Section: 27
Township-range comments: NW4SW4

Survey date: 1989-06-29 Elevation: 6690
First observation: 1989 Slope/aspect: 3-8% / SOUTH
Last observation: 1989-06-29 Size (acres): 1

Location:
HORSE PRAIRIE, CA. 0.5 MILES SE OF HORSE PRAIRIE GUARD STATION.

Element occurrence data:
ONLY 3 PLANTS, ON A ROADCUT.

General site description:
ON ROADSIDE, WITH ARTEMISIA TRIDENTATA, BALSAMORHIZA SAGITTATA, CASTILLEJA PALLESCENS, FESTUCA IDAHOENSIS, AND FRAGARIA VESCA.

Land owner/manager:
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
NONE.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEY OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.028

Survey site name: BLOODY DICK CREEK I
EO rank: C
EO rank comments: ROADCUT POPULATION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township-range: 009S014W Section: 31
Township-range comments: W2,SE4;T10SR14W:5NW4

Survey date: 1989-06-29 Elevation: 6600
First observation: 1989 Slope/aspect: 0-3% / SW
Last observation: 1989-06-29 Size (acres): 2

Location:
HORSE PRAIRIE, ALONG BLOODY DICK CREEK, CA. 7.1 MILES WEST OF RED BUTTE.

Element occurrence data:
34 PLANTS, FOUR SMALL SUBPOPULATIONS (1989).

General site description:
PLANTS ALONG ROADSIDE, WITH ARTEMISIA TRIPARTITA, FESTUCA IDAHOENSIS, AGROPYRON SPICATUM AND CASTILLEJA PALLESCENS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
AREAS WHICH HAD FEW OR NO PLANTS IN 1988, HAD AS MANY AS 10-15 PLANTS IN 1989.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEY OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.029

Survey site name: BLOODY DICK CREEK 2
EO rank: C
EO rank comments: SMALL POPULATION, CLOSE TO ROADWAY.

County: BEAVERHEAD

USGS quadrangle: EVERSON CREEK

Township-range: 010S014W Section: 05
Township-range comments: NW4;4N2

Survey date: 1989-06-29 Elevation: 4440
First observation: 1989 Slope/aspect: 0-8% / SW
Last observation: 1989-06-29 Size (acres): 2

Location:
HORSE PRAIRIE, CA. 5.1 MILES WEST OF RED BUTTE, ALONG BLOODY DICK CREEK ROAD.

Element occurrence data:
22 PLANTS, FOUR SMALL SUBPOPULATIONS (1989).

General site description:
WITH ARTEMISIA TRIDENTATA, CASTILLEJA PALLESCENS, ORTHOCARPUS LUTEUS AND AGROPYRON SPICATUM.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
NONE.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEYS OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.030

Survey site name: SPRING GULCH
EO rank: D
EO rank comments: VERY SMALL POPULATION, WEEDY HABITAT.

County: RAVALLI

USGS quadrangle: ROBBINS GULCH

Township-range: 003N020W Section: 24
Township-range comments: SE4SE4

Survey date: 1989-06-27 Elevation: 5200
First observation: 1989 Slope/aspect: 35%+ / SE
Last observation: 1989-06-27 Size (acres): 1

Location:
WESTERN FOOTHILLS OF SAPPHIRE MOUNTAINS, RYE CREEK DRAINAGE, SPRING GULCH, 1.15 AIR MILES NORTHEAST OF CONFLUENCE OF RYE CREEK AND NORTH FORK RYE CREEK, CA. 8 AIR MILES ESE OF DARBY.

Element occurrence data:
FOUR PLANTS OBSERVED; ONE FLOWERING, 3 STERILE ROSETTES; HABITAT SERIOUSLY IMPACTED BY KNAPWEED INVASION.

General site description:
GRANITIC GRAVELLY LOAM SOILS; PURSHIA TRIDENTATA/AGROPYRON SPICATUM HABITAT, WITH CENTAUREA MACULOSA, BALSAMORHIZA SAGITTATA, BROMUS TECTORUM, KOELERIA CRISTATA, POA SECUNDA, ACHILLEA MILLEFOLIUM, DESCURAINIA RICHARDSONII, PHACELIA LINEARIS, LOMATIUM DISSECTUM, TRAGOPOGON DUBIUS.

Land owner/manager:
BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:
SIGHT RECORD, NO VOUCHER SPECIMEN COLLECTED; SITE SURVEYED WITH A. KRATZ, BITTERROOT / LOLO N.F.S.

Information source:
SHELLY, J.S. 1989. FIELD SURVEYS IN RAVALLI COUNTY, 26-29 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.031

Survey site name: ROBBINS GULCH
EO rank: D
EO rank comments: SMALL POPULATION, IN FAIRLY WEEDY AREA.

County: RAVALLI

USGS quadrangle: ROBBINS GULCH

Township-range: 002N020W Section: 16
Township-range comments: N2NW4,9SE4SW4

Survey date: 1989-06-29 Elevation: 4500
First observation: 1989 Slope/aspect: 8-35% / SE
Last observation: 1989-06-29 Size (acres): 5

Location:
WESTERN FOOTHILLS OF SAPPHIRE MOUNTAINS, EAST FORK BITTERROOT RIVER DRAINAGE, ROBBINS GULCH, NORTH OF BITTERROOT N.F. RD. #446, CA. 1 MILE NORTHEAST OF U.S. HWY. 93.

Element occurrence data:
14 PLANTS OBSERVED, IN 5 SMALL COLONIES; 8 FLOWERING, 6 ROSETTES, ONE PLANT ON ROADSIDE.

General site description:
GRANITIC, SANDY TO GRAVELLY LOAM SOILS; PINUS PONDEROSA/PURSHIA TRIDENTATA HABITAT, WITH KOELERIA CRISTATA, CENTAUREA MACULOSA, AGROPYRON SPICATUM, BALSAMORHIZA SAGITTATA, PHACELIA LINEARIS, POA SECUNDA, ALYSSUM ALYSSOIDES, LITHOSPERMUM RUDERALE, PENSTEMON ALBERTINUS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:
VOUCHER - SHELLY, J.S. (1569) AND A. KRATZ, 1989.

Information source:
SHELLY, J.S. 1989. FIELD SURVEYS IN RAVALLI COUNTY, 26-29 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.032

Survey site name: POLARIS
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: POLARIS - 15'

Township-range: 005S012W Section: 30
Township-range comments: NE4NE4,19SE4SE4

Survey date:
First observation: 1989
Last observation: 1989-06-28

Elevation: 6400
Slope/aspect: 35% / EAST
Size (acres): 0

Location:
GRASSHOPPER CREEK RD., CA. 0.5 MILES NORTH OF POLARIS, CA. 0.1 MILE NORTH OF GRASSHOPPER CREEK CROSSING, IMMEDIATELY NORTH OF GRAVEL PIT.

Element occurrence data:
POPULATION OF 50+ PLANTS IN 1989.

General site description:
GROWING ON EAST-FACING ROADCUT IN ALLUVIUM WITH 50 PERCENT COARSE FRAGMENTS, WITH ARTEMISIA TRIDENTATA, CHRYSOTHAMNUS NAUSEOSUS, AGROPYRON SPICATUM, AND BROMUS TECTORUM.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
PLANTENBERG - "THE SITE WILL EVENTUALLY BE LOST TO KNAPWEED CONTROL - ACTIVE ROADCUT."

Information source:
PLANTENBERG, PATRICK L. DEPT. OF STATE LANDS, HARD ROCK BUREAU, RECLAMATION DIVISION, 1625 11TH AVE., HELENA, MT 59620.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.033

Survey site name: SHALE CREEK
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: POLARIS - 15'

Township-range: 005S012W Section: 08
Township-range comments: SW4SW4

Survey date:
First observation: 1989
Last observation: 1989-06-28

Elevation: 6560
Slope/aspect: 35% / EAST
Size (acres): 0

Location:
GRASSHOPPER CREEK RD., CA. 2.5 MILES NORTH OF POLARIS, ON CREST OF HILL.

Element occurrence data:
POPULATION OF 2 PLANTS IN 1989.

General site description:
ON EAST FACING ROADCUT. IN DEEP LOAMY SOIL, WITH LESS THAN 5% COARSE FRAGMENTS, WITH ARTEMISIA TRIDENTATA, GUTIERREZIA SAROTHRAE, AGROPYRON SPICATUM, AND BROMUS TECTORUM.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
PLANTENBERG - "SITE WILL EVENTUALLY BE ELIMINATED BY KNAPWEED CONTROL - ACTIVE ROADCUT."

Information source:
PLANTENBERG, PATRICK L. DEPT. OF STATE LANDS, HARD ROCK BUREAU, RECLAMATION DIVISION, 1625 11TH AVE., HELENA, MT 59620.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.034

Survey site name: BLOODY DICK CREEK III
EO rank: B
EO rank comments: CLOSE TO ROADWAYS, BUT LARGE POPULATIONS.

County: BEAVERHEAD

USGS quadrangle: KITTY CREEK

Township-range: 009S015W Section: 25
Township-range comments: SW4

Survey date: 1989-06-29 Elevation: 6600
First observation: 1989 Slope/aspect: 0-30% / SW
Last observation: 1989-06-29 Size (acres): 15

Location:
BLOODY DICK CREEK RD., CA. 0.75 MILE SOUTH OF EAST PETERSON CK.

Element occurrence data:
74 PLANTS IN 3 SUBPOPULATIONS IN 1989.

General site description:
SOUTHWEST SLOPE, WITH ARTEMISIA TRIPARTITA, FESTUCA IDAHOENSIS, AGROPYRON SPICATUM, AND CASTILLEJA PALLESCENS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER - SCHASSBERGER, L.A. (303), 1989.

Information source:
SCHASSBERGER, L.A. 1989, FIELD SURVEY OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.035

Survey site name: DUTCH CREEK
EO rank: C
EO rank comments: SMALL ROADSIDE POPULATION.

County: BEAVERHEAD

USGS quadrangle: KITTY CREEK

Township-range: 009S015W Section: 14
Township-range comments: SW4,23NE4

Survey date: 1989-06-29 Elevation: 6760
First observation: 1989 Slope/aspect: 0-35% / SW
Last observation: 1989-06-29 Size (acres): 12

Location:
BLOODY DICK CREEK RD., CA. 0.25 MILE NORTH AND 0.3 MILE SOUTH OF DUTCH CREEK.

Element occurrence data:
CA. 30 PLANTS IN 2 SUBPOPULATIONS IN 1989.

General site description:
ROADSIDE POPULATIONS IN ROCKY LOAM SOILS, WITH ARTEMISIA TRIDENTATA AND FESTUCA IDAHOENSIS.

Land owner/manager:
BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT
BLM: DILLON RESOURCE AREA, BUTTE DISTRICT

Comments:
VOUCHER - SCHASSBERGER, L.A. (302), 1989.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEY OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.036

Survey site name: BLANCHARD POND
EO rank: D
EO rank comments: POPULATION IN ROADCUT.

County: BEAVERHEAD

USGS quadrangle: JACKSON

Township-range: 006S015W Section: 33
Township-range comments: NE4SE4

Survey date: 1989-06-30 Elevation: 6880
First observation: 1989 Slope/aspect: 3-8% / EAST
Last observation: 1989-06-30 Size (acres): 1

Location:
BIG HOLE RIVER DRAINAGE, SKINNER MEADOWS RD., CA. 6.5 MILES SSW OF JACKSON.

Element occurrence data:
61 PLANTS COUNTED.

General site description:
ON (ALLUVIAL) ROAD EMBANKMENT, WITH ARTEMISIA TRIDENTATA, ERIOGONUM UMBELLATUM VARIETIES SUBALPINUM AND INTECTUM, AND ERIOPHYLLUM LANATUM.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
VOUCHER - SCHASSBERGER, L.A. (309), 1989. POPULATION MAY BE DESTROYED THROUGH ROAD MAINTENANCE ACTIVITIES.

Information source:
SCHASSBERGER, L.A. 1989. FIELD SURVEY OF SOUTHWEST MONTANA, 26-30 JUNE.

PENSTEMON LEMHIENSIS
LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE LIST
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.037

Survey site name: WOODS CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: PAINTED ROCKS LAKE (15')

Township-range: 003S022W Section: 20
Township-range comments: 19,21

Survey date:
First observation: 1989
Last observation: 1989-

Elevation: 5440
Slope/aspect: - / SOUTH?
Size (acres): 0

Location:
WOODS CREEK, PAST PAINTED ROCKS RESERVOIR.

Element occurrence data:
7 PLANTS COUNTED.

General site description:
ROADBANK.

Land owner/manager:
BITTERROOT NATIONAL FOREST, WEST FORK RANGER DISTRICT

Comments:
EXACT LOCATION UNKNOWN; SPECIES MAY OCCUR FARTHER UP WOODS CREEK DRAINAGE.

Information source:
ALBERT, W. (INFORMATION FORWARDED BY K. McBRIDE, BITTERROOT NATIONAL FOREST).

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